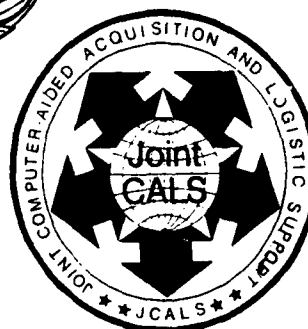
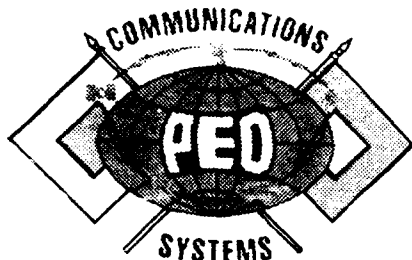


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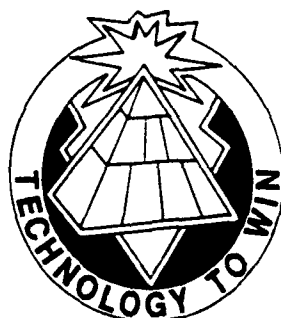
**UNITED STATES ARMY
COMMUNICATIONS-ELECTRONICS COMMAND
FORT MONMOUTH, NEW JERSEY**



DTIC
ELECTE
JUN 08 1994
SSG



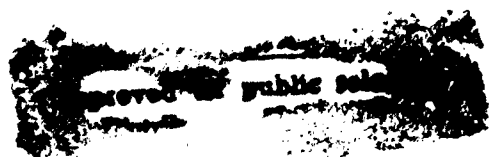
94-17371



**ADVANCE PLANNING
BRIEFING FOR INDUSTRY
" WINNING THE INFORMATION WAR"**

OCEAN PLACE HILTON RESORT AND SPA

MAY 11-12, 1994



94 6 7 118

**Best
Available
Copy**

NOTICE

This publication contains the briefings presented during this Advance Planning Briefing for Industry (APBI). Following the APBI, you may obtain a Proceedings Book for a minimum fee, by contacting the Defense Technical Information Center (DTIC). The telephone number is (703) 274-7633.

We hope that the above publication proves beneficial to your long-range planning efforts. If you have any additional questions and/or suggestions, please contact the Program Analysis and Evaluation Directorate, AMSEL-PE-OD, ATTN: Mari Aufseeser, (908) 532-5054.

AMSEL-IO

10 May 1994

MEMORANDUM FOR AMSEL-PE-OD

SUBJECT: Clearance of Manuscript for Public Release
Title: Various Manuscripts for APBI

1. The manuscripts for the Advanced Planning Briefing for Industry have been cleared by this office with the following determination:

__X__a. No further clearance is necessary unless substantial changes/additional information is incorporated during future revision.

_____b. Clearance of the paper for this occasion does not constitute approval for other publications/presentations. Requests for future dissemination must be submitted through the Public Affairs Office for clearance.

_____c. Clearance of the abstract only. Clearance of the abstract does not constitute clearance of the completed paper which must be submitted through channels to the Public Affairs Office.

_____d. In accordance with DOD Regulation 5230.25, Distribution Statement "D" is imposed limiting disclosure to Department of Defense and DOD contractors only. Other requests must be submitted through channels to the Public Affairs Office.

2. The POC for this office is Marjorie Eichholz, x21258.

3. CECOM Bottom Line: THE SOLDIER.

2 Encls

1. SEL Form 1012
2. Manuscript

Marjorie Eichholz
HENRY T. KEARNEY
for Chief, Public Affairs



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY COMMUNICATIONS-ELECTRONICS COMMAND
AND FORT MONMOUTH
FORT MONMOUTH, NEW JERSEY 07703-5000



Office of the Commanding General

Ladies and Gentlemen:

On behalf of the Communications-Electronics Command (CECOM) and the C4I community, I am pleased to present these proceedings of the CECOM 1994 Advance Planning Briefing for Industry (APBI). The objective of this publication is to encourage an exchange of information which will assist the Department of the Army in fulfilling its long range acquisition requirements while providing Industry with fair and equitable acquisition and investment opportunities.

Since we are significantly impacted by the constraints on defense resources, it is imperative that Government and Industry continue to work together as a team in order to provide efficient and cost effective quality support to the soldier in the field.

I welcome your participation in our APBI program.

Sincerely,

Otto J. Guenther
Otto J. Guenther
Major General, U.S. Army
Commanding

Accession For	
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DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
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The information provided is accurate as of the time of publication, and may be subject to change.

**THE OVERALL CLASSIFICATION
OF THIS PUBLICATION IS
UNCLASSIFIED**

ADVANCE PLANNING BRIEFING FOR INDUSTRY

**MAY 11-12, 1994
OCEAN PLACE HILTON RESORT AND SPA
LONG BRANCH, NEW JERSEY**

**MEETING CHAIRMAN
MG OTTO J. GUENTHER
COMMANDING GENERAL, CECOM**

AGENDA

TUESDAY, MAY 10, 1994

1800-2000 PRE-REGISTRATION - HILTON

WEDNESDAY, MAY 11, 1994

0630 REGISTRATION

**0815 ADMINISTRATIVE REMARKS
Mr. Edward C. Thomas
Director, Program Analysis and Evaluation, CECOM**

**0825 KEYNOTE ADDRESS
MG Otto J. Guenther
Commanding General, CECOM**

0900 SESSION I: ACQUISITION INITIATIVES

**SESSION OVERVIEW AND INTRODUCTION
MODERATOR**

**Mr. Edward G. Elgart
Director, C3I Acquisition Center, CECOM**

**CECOM ACQUISITION REFORM
Mr. Edward G. Elgart
Director, C3I Acquisition Center, CECOM**

**0920 CONTINUOUS ACQUISITION AND LIFE CYCLE SUPPORT
Mr. Richard L. Uldrich
CALs Principal, CECOM CALs Support Office**

**0940 COMMERCIAL PRACTICE INITIATIVES
Mr. J. Michael Ryskamp
Chief, Product Integrity and Value Management Branch
Product Integrity and Production Engineering
Directorate, CECOM**

1000 QUESTION AND ANSWER PERIOD

1010 BREAK

1030 SESSION II: "SEE AND HEAR"

Warfighting capabilities cannot be eroded by night or weather. Warfighters must "see" and "hear" the same battlefield based upon common information appropriate for his/her platform or echelon of command.

SESSION OVERVIEW AND INTRODUCTION
MODERATOR
COL Thomas L. Vollrath
Program Executive Officer, Intelligence and Electronic Warfare

1040 INTERCEPT AND TACTICAL INTELLIGENCE DATA FUSION
TECHNOLOGY
Mr. Ronald J. Dlugosz
Chief, Advanced Concepts Division
Intelligence and Electronic Warfare Directorate, CECOM

1100 "A NEW WAY OF DOING BUSINESS" - GOVERNMENT AND
INDUSTRY TEAM
Mr. Larry L. Fillian
Associate Director, Operations
Night Vision and Electronic Sensors Directorate, CECOM

1120 JOINT STARS GROUND STATION MODULE
COL James L. Mitchell
Project Manager, Joint Surveillance Target Attack
Radar System

1145 QUESTION AND ANSWER PERIOD

1200 LUNCH

1330 FIREFINDER P3I PROGRAM
Ms. Maureen A. Molz
Project Leader, FIREFINDER P3I Program
Product Manager, FIREFINDER

1345 IEW COMMON SENSOR SYSTEMS
Mr. William S. Hayden
Deputy Project Manager, Signals Warfare

1400 ELECTRONICS FOR THE INFORMATION AGE
Dr. Clarence G. Thornton
Directorate Executive, Electronics and Power Sources,
US Army Research Laboratory

1430 QUESTION AND ANSWER PERIOD

1440 BREAK

- 1500 **SESSION III: "DISRUPT AND DENY"**
- The warfighter must have uninterrupted access to the electromagnetic spectrum to eavesdrop and take its use away from the enemy through jamming and precision strikes.
- SESSION OVERVIEW AND INTRODUCTION**
MODERATOR
Mr. Robert F. Giordano
Director, Research, Development and Engineering Center, CECOM
- 1510 **THE ARMY ADVANCED CONCEPTS AND TECHNOLOGIES PROGRAM (ACT II)**
Dr. Kenneth A. Gabriel
Chief, Army Research Office - Washington
- 1530 **ELECTRONIC WARFARE TECHNOLOGY AND IEW TECHNOLOGY ASSESSMENT CENTER**
Mr. Ronald J. Dlugosz
Chief, Advanced Concepts Division
Intelligence and Electronic Warfare Directorate, CECOM
- 1550 **ARMY SECURE TACTICAL INITIATIVE (ASTI) TRUSTED NETWORK BASE (TNB)**
Mr. Joseph J. Pucilowski, Jr.
Director, Space and Terrestrial Communications, CECOM
- 1610 **SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL TECHNOLOGY**
Mr. Gary P. Martin
Product Leader, Single Channel Anti-Jam Manportable Terminal
Project Manager, MILSTAR (Army)
- 1630 **QUESTION AND ANSWER PERIOD**
- 1730 **RECEPTION**

THURSDAY, MAY 12, 1994

0755 ADMINISTRATIVE REMARKS

Mr. Edward C. Thomas
Director, Program Analysis and Evaluation, CECOM

0800 SESSION IV: "OUT-THINK" THE ENEMY

The warfighter must maintain the upper hand and react quicker than the enemy through more timely intelligence. The warfighter must operate within the enemy's decision cycle.

SESSION OVERVIEW AND INTRODUCTION

MODERATOR

Mr. Bennett R. Hart
Deputy Program Executive Officer, Command and Control Systems

0810 ARMY GLOBAL COMMAND AND CONTROL SYSTEM

LTC David J. Kirks
Product Manager, Strategic Army Command and Control Software
Project Manager, Army Worldwide Military Command and Control Systems Information System

0825 MANEUVER CONTROL SYSTEM VERSION 12

Mr. Peter Johnson
Product Manager, Maneuver Control System/Common Hardware System
Project Manager, Operations Tactical Data Systems

0840 C3 TECHNOLOGY ENGINEERING AND INTEGRATION

Mr. Robert J. Carnevale
Manager, ATCCS SE&I Program
Program Executive Office, Command and Control Systems

0855 QUESTION AND ANSWER PERIOD

0905 BREAK

0925 SESSION V: "COMMUNICATE"

Systems must be linked through intelligent gateways which are transparent to the warfighter in order to fully exploit information management technologies.

SESSION OVERVIEW AND INTRODUCTION

MODERATOR

BG David R. Gust
Program Executive Officer, Communications Systems

- 0935 DIGITAL BATTLEFIELD COMMUNICATIONS
 Mr. Joseph J. Pucilowski, Jr.
 Director, Space and Terrestrial Communications, CECOM
- 0955 THE FUTURE DATA RADIO
 Mr. Harold H. Bahr
 Deputy Project Manager, Army Data Distribution System
- 1010 SUPER HIGH FREQUENCY (SHF) TRI-BAND ADVANCED RANGE
 EXTENSION TERMINAL
 LTC Michael R. Mazzucchi
 Product Manager, Tactical Satellite Terminals
 Project Manager, Satellite Communications
- 1025 QUESTION AND ANSWER PERIOD
- 1040 STRATEGIC/BASE COMMUNICATIONS
 MODERATOR
 Mr. Thomas J. Michelli
 Deputy Program Manager, Army Information Systems
 and Deputy, US Army Information Systems Management
 Activity
- 1050 WHITE SANDS MISSILE RANGE TEST SUPPORT NETWORK
 LTC Scipio deKanter
 Product Manager, Western Hemisphere Transmission
 Systems
 Project Manager, Defense Communications and Army
 Switched Systems
- 1105 OUTSIDE CABLE REHABILITATION II (OSCAR II)
 COL Dennis M. Moen
 Project Manager, Defense Communications and Army
 Switched Systems
- 1115 SMALL COMPUTER PROGRAMS:
 ARMY PERSONAL COMPUTER - 1 (PC-1)
 ARMY PORTABLE COMPUTER - 1 (PORTABLE-1)
 SMALL MULTIUSER COMPUTER - II (SMC-II)
 COL Dennis M. Moen
 Project Manager, Defense Communications and Army
 Switched Systems
- 1140 QUESTION AND ANSWER PERIOD
- 1150 LUNCH

1315 SESSION VI: SUSTAINING THE BATTLEFIELD

 SESSION OVERVIEW AND INTRODUCTION

 MODERATOR

 Mr. Colin F. MacDonnell, Jr.
 Director, C3I Logistics and Readiness Center, CECOM

1325 SPARES

 Mr. William C. Riehl
 Director, Materiel Management, CECOM

1340 BATTERY SELECTION AND POWER MANAGEMENT IN MAJOR
 SYSTEMS TO REDUCE O&S COSTS

 Mr. Richard Rizzo
 AMC Battery Focal Point
 Systems Management Directorate, CECOM

1355 OPPORTUNITIES IN FOREIGN MILITARY SALES

 Mr. Eugene P. Bennett
 Director, Security Assistance Management, CECOM

1415 QUESTION AND ANSWER PERIOD

1430 EXECUTIVE PANEL

 MG Otto J. Guenther
 Commanding General
 US Army Communications-Electronics Command

 BG David R. Gust
 Program Executive Officer
 Communications Systems

 Mr. Robert F. Giordano
 Director, Research, Development and
 Engineering Center, CECOM

 Mr. Colin F. MacDonnell, Jr.
 Director, C3I Logistics and Readiness Center, CECOM

 Mr. Edward G. Elgart
 Director, C3I Acquisition Center, CECOM

 Mr. Bennett R. Hart
 Deputy Program Executive Officer
 Command and Control Systems

 COL Thomas L. Vollrath
 Program Executive Officer
 Intelligence and Electronic Warfare

 Mr. Thomas J. Michelli
 Deputy Program Manager, Army Information Systems
 and Deputy, US Army Information Systems Management
 Activity

1545 CLOSING REMARKS

 MG Otto J. Guenther
 Commanding General, CECOM

1600 ADJOURN

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KEYNOTE ADDRESS

MG OTTO J. GUENTHER
COMMANDING GENERAL, CECOM

NOTES

SESSION I

ACQUISITION INITIATIVES

MODERATOR

MR. EDWARD G. ELGART
DIRECTOR
C3I ACQUISITION CENTER
CECOM



ACQUISITION INITIATIVES



CECOM ACQUISITION REFORM

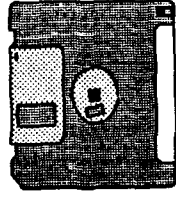
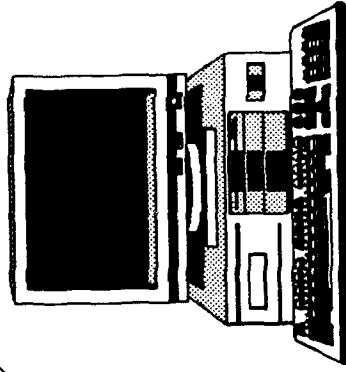


EDWARD G. ELGART
DIRECTOR, C3I ACQUISITION CENTER
UNCLASSIFIED

ACQUISITION STREAMLINING

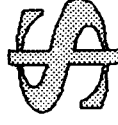
AGENDA

EBB



**CDRL/SPEC
REDUCTION
CLAUSE SCRUB
REDUCE SPECS
REDUCE CDRL
TEMPLATING**

BEST VALUE



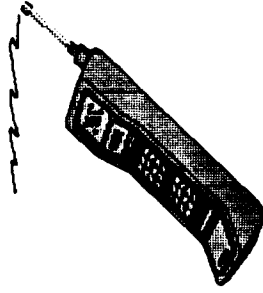
FULL LIFE CYCLE

ATD'S

**ADVANCED TECHNOLOGY
DEMONSTRATIONS
REDUCE COST & TIME
OF DOING BUSINESS**

ACQUISITION STREAMLINING AGENDA(CONT)

**NDI/COTS
ACQUISITIONS**



PACER ACQUISITIONS



**OMNIBUS
CONTRACTING**

PACER ACQUISITIONS

MYTH

**FORMAL SOURCE
SELECTION TAKES
ONE YEAR...**

PACER ACQUISITIONS



REALITY

**TESAR
AWARDED IN
96 DAYS**

REALITY

**TRI-BAND
AWARDED IN 72 DAYS**



BEST VALUE ACQUISITIONS



MYTH

**BEST VALUE =
LOWEST PRICE**

MYTH

**BV IS USED
FOR SYSTEMS
ACQUISITIONS**

BEST VALUE ACQUISITIONS

REALITY

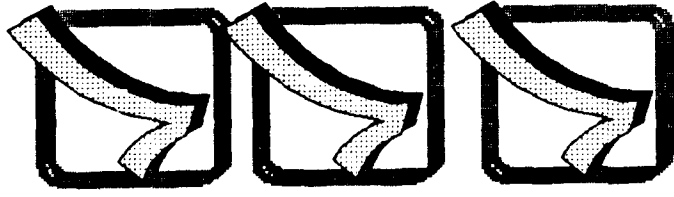
CECOM USES BV FOR ALL
COMPETITIVE NEGOTIATED
ACQUISITIONS

REALITY

33% CECOM BV AWARDS
TO OTHER THAN
LOWEST OFFER

ALL BEST VALUE PROTESTS
DENIED AT GAO

CDRLS/SPECS REDUCTION



CHANGE THE CULTURE

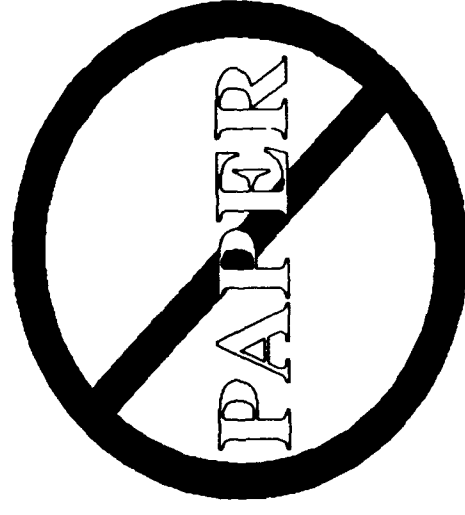
CHALLENGE THE "NORM"

TEAMWORK AND RESPECT

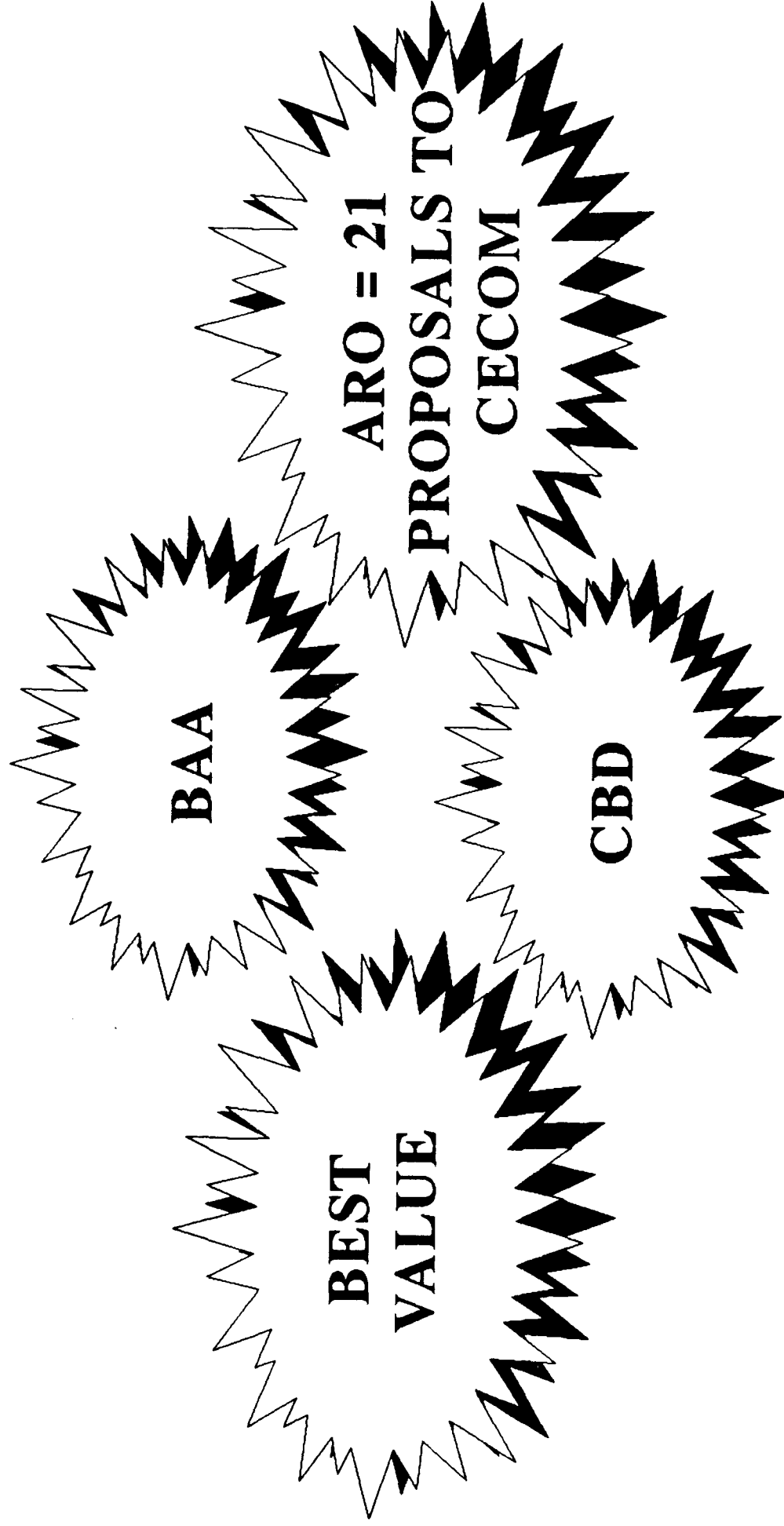
BUY VALUE

TEMPLATE REVIEW

**LESS GOVERNMENT OVERSIGHT
FEWER SPECS AND STANDARDS
FEWER REPORTS
NON-STANDARD CLAUSES
ONLY DATA WE NEED**

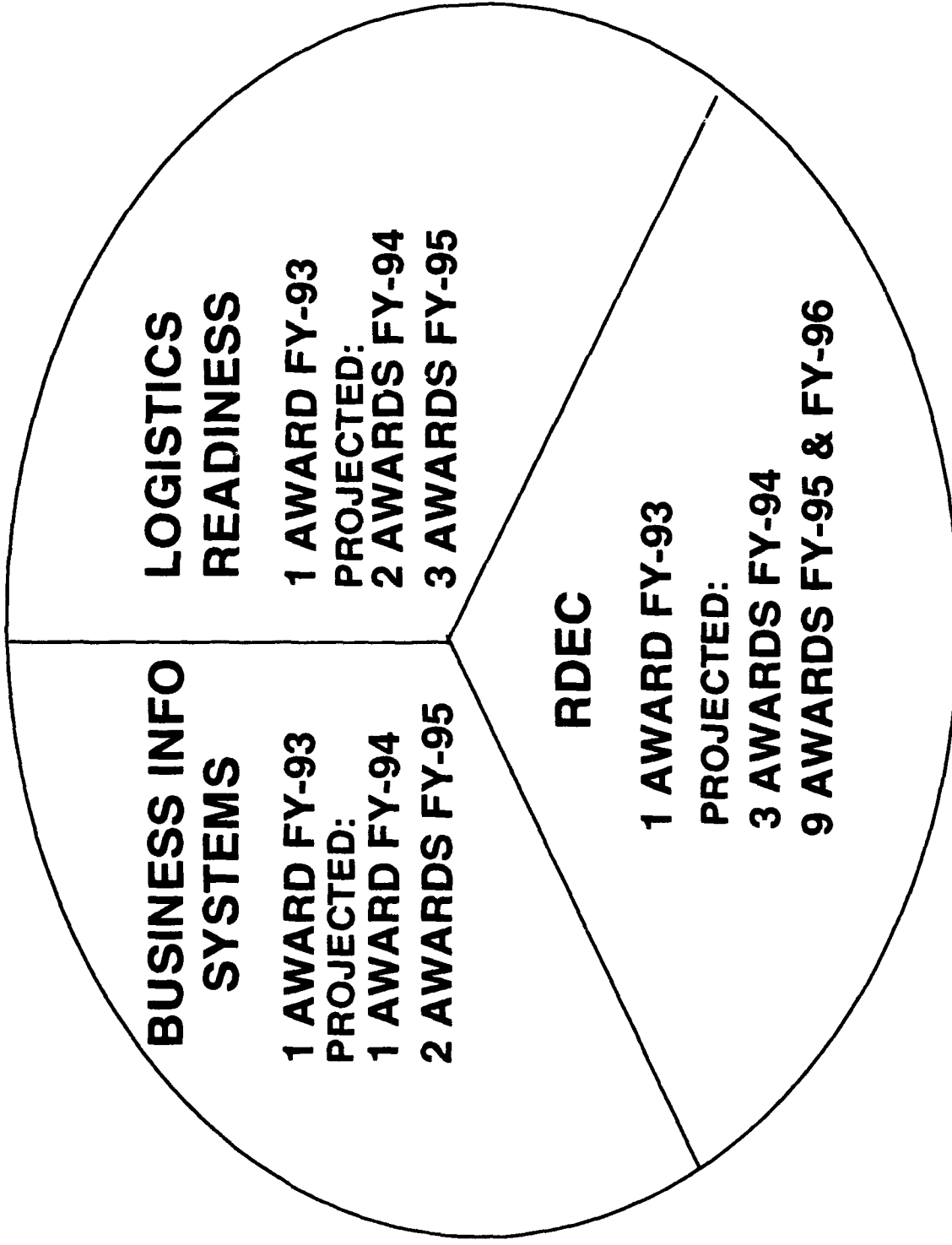


ADVANCED TECHNOLOGY DEMONSTRATIONS (ATD's)



REDUCING TIME AND COST

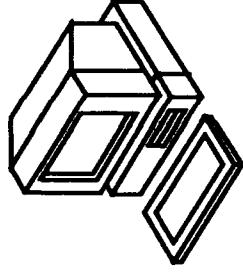
OMNIBUS CONTRACTING



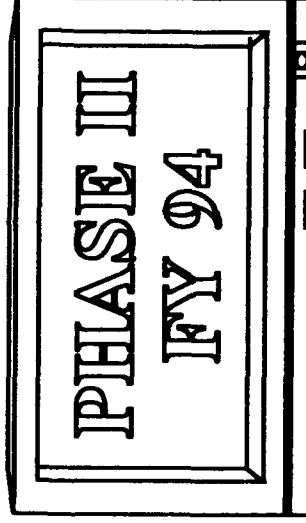
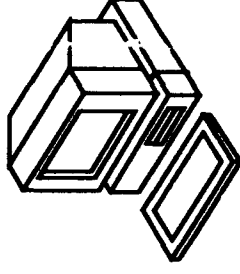
CONTRACTING WILL UTILIZE THE ELECTRONIC BULLETIN BOARD

PHASE I - ISLANDS OF EBB

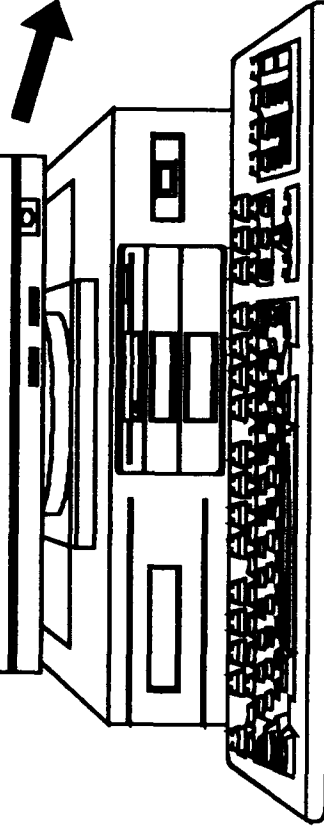
MANY PHONE
NUMBERS



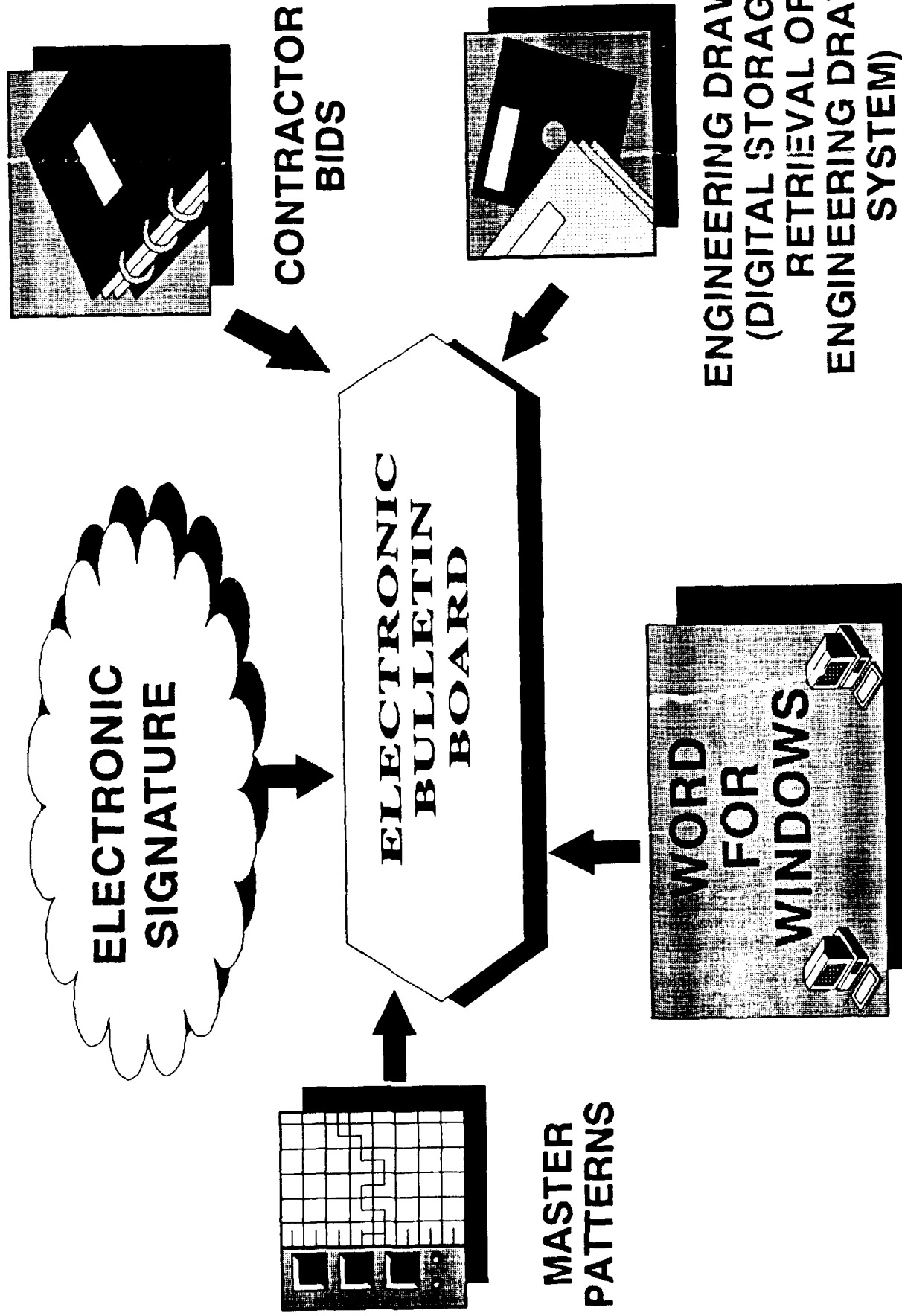
MULTIPLE
PASSWORDS



1 PHONE NUMBER
(908)542-9020
1 PASSWORD
1 ID

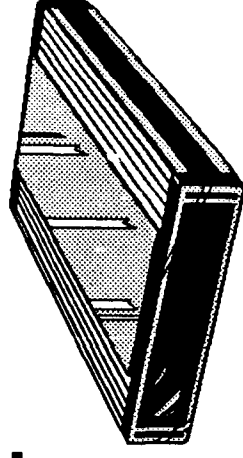
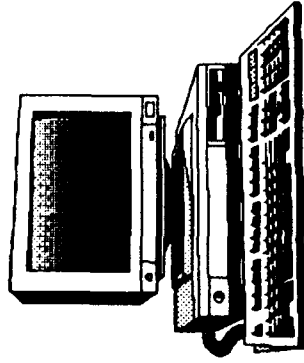


ALL ELECTRONIC PROCUREMENT PROCESS

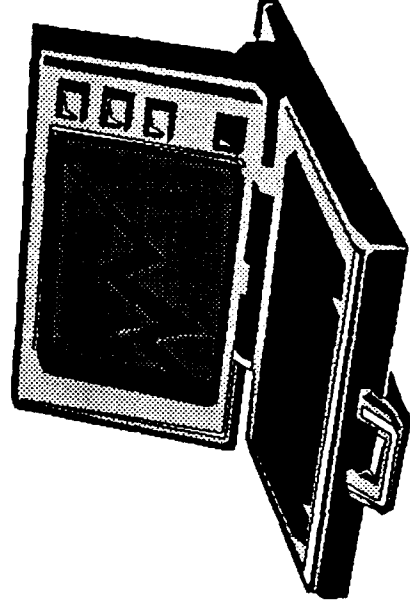
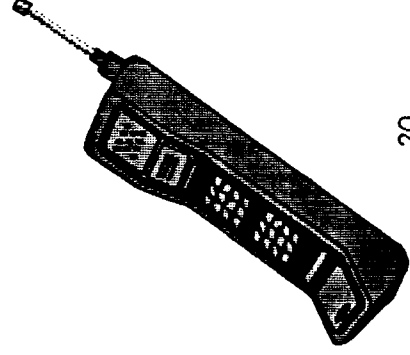
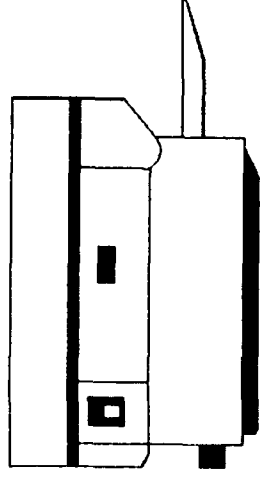


NDI/COTS ACQUISITIONS

"COMMERCIAL MARKETS INCREASINGLY ARE
DRIVING STATE-OF-THE-ART TECHNOLOGY
DEVELOPMENTS AND DOD CAN NO LONGER
AFFORD TO SEPARATELY FUND MANY
TECHNOLOGY EFFORTS...."



DEFENSE PERFORMANCE REVIEW -
MRS. PRESTON (DUSD-AR)



WHAT WILL

TOMORROW



BRING....

RE-ENGINEERING THE ACQUISITION PROCESS

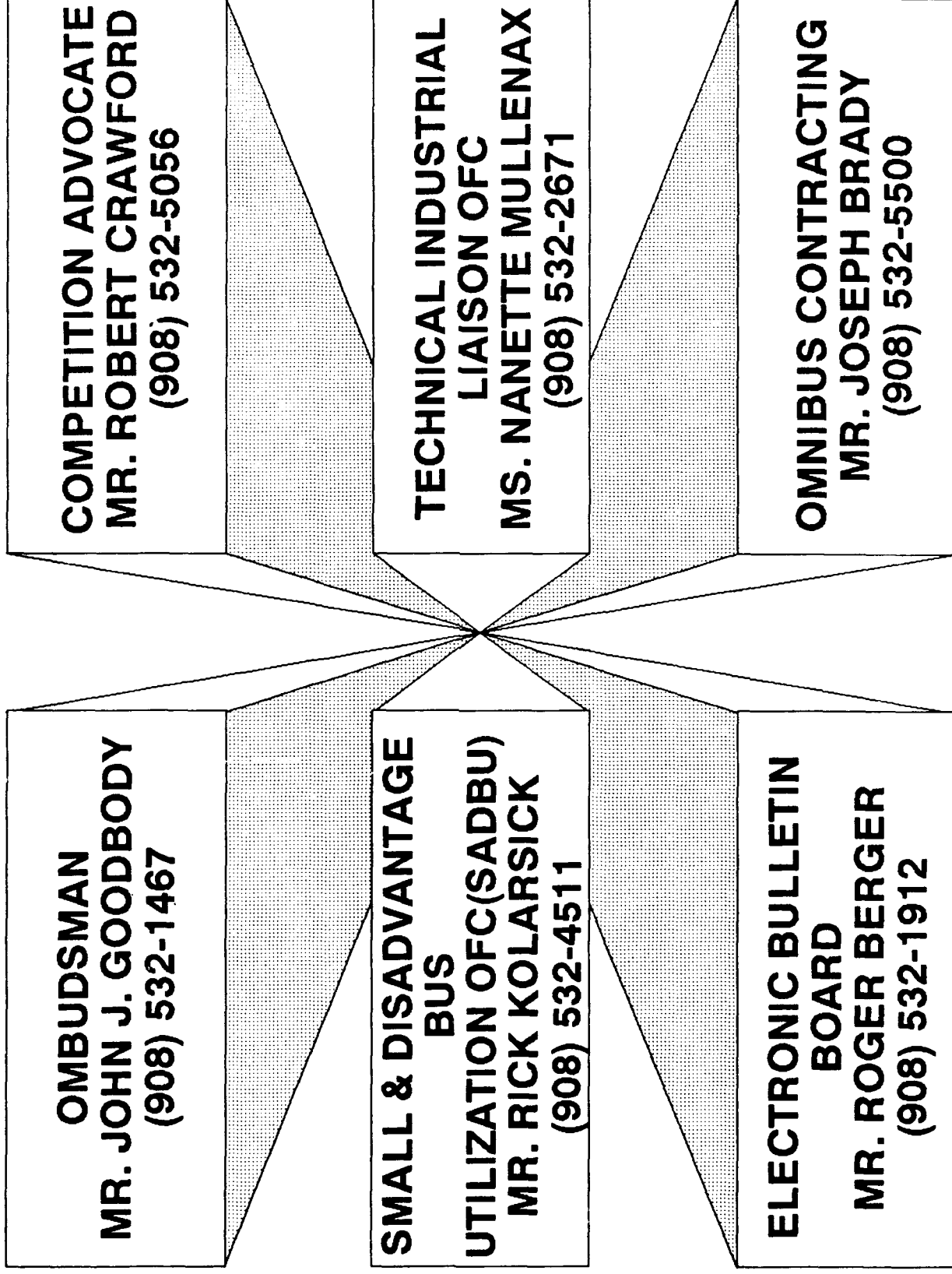
**REDUCE IFB
TIME
60-70 DAYS**

**BEST VALUE
(PACER ACQS)
90-100 DAYS**

**CYCLE TIME
REDUCTION**

INDUSTRY SUPPORT

POINTS OF CONTACTS

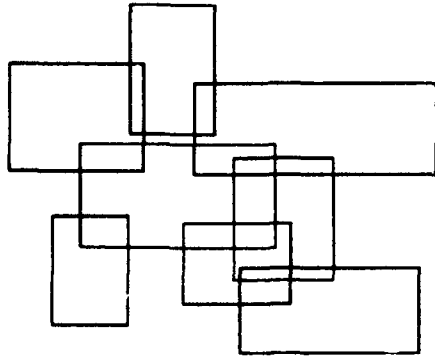


SMALL BUSINESS GOALS

FY94

	GOALS	ACHIEVED (A/O 31 MAR 94)
SMALL BUSINESS	10.9%	12.1%
SMALL DISADVANTAGE (8A)	3.0%	3.1%
WOMEN OWNED	.9%	.52%
SMALL BUS R&D	8.6%	7.4%
EDUCATIONAL HBCU/MI	19.0%	16.0%

NOTES



RICHARD ULDRICH
CALS Principal
CECOM CALS Support Office

Unclassified

SUBJECT: APBI Briefing - CECOM CALS Initiatives

OBJECTIVE: CALS is dedicated to making the transition from a paper environment to digital information. CALS will dramatically reduce product development lead times, improve quality, and reduce acquisition and engineering costs by re-engineering acquisition and logistics business processes.

FACTS:

- ◆ Goals of CALS are to buy information **once**, and use many times; make best use of CALS/commercial standards; establish integrated product database; and utilize automation as a resource multiplier.
- ◆ Technical Manuals, Drawings, Electronic Procurements, Computerized Manufacturing, Electronic Engineering Change Proposals, Infrastructure and Engineering Data are directed by the CALS standards.
- ◆ Contract Opportunities: Legacy conversion of Master Patterns and Technical Manuals.

BRIEFER: Richard Uldrich, CECOM CALS Principal, AMSEL-LC-ED-CALS, (908) 532-3744.

Action Officer:
Richard Uldrich
CECOM CALS Principal
(908) 532-3744

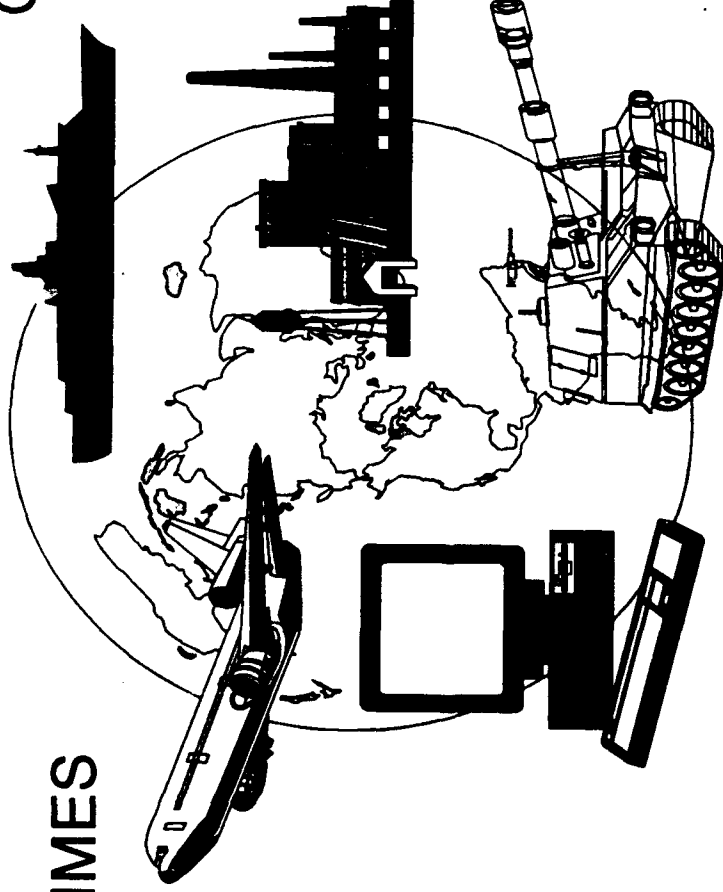
WHAT IS CALS

- Continuous Acquisition and Life-Cycle Support
- Integration of digital technical information for weapon systems
- - Acquisition
 - Design
 - Manufacture
 - Life-cycle support
- Transition from paper to digital information

GOALS

BUY INFORMATION
ONCE
USE MANY TIMES

MAKE BEST USE OF
CALS/COMMERCIAL
STANDARDS



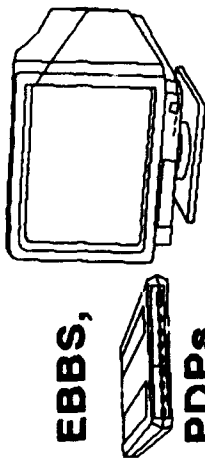
ESTABLISH
INTEGRATED
PRODUCT
DATABASE

IMPROVE BUSINESS
PROCESSES

UTILIZE
AUTOMATION
AS RESOURCE
MULTIPLIER

CECOM CALS ENVIRONMENT

**ELECTRONIC
PROCUREMENT**

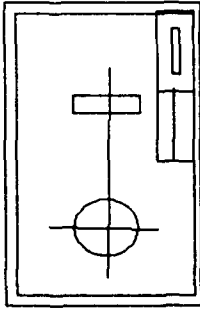


EBBS,

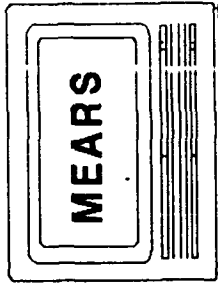
PDPs,

SOLICITATIONS, etc.

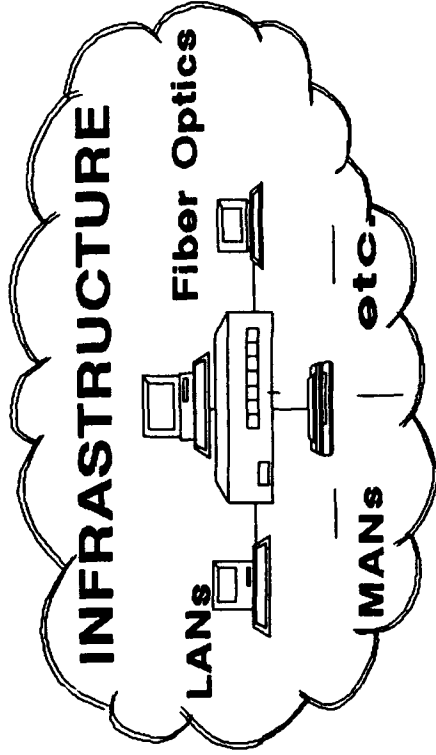
**DRAWINGS
(DSREDS)**



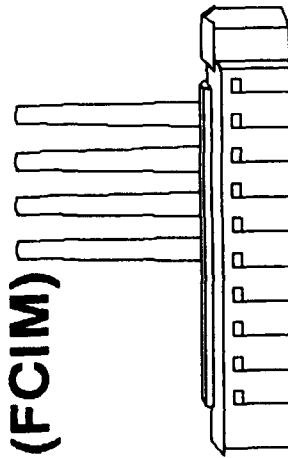
**ELECTRONIC
ECPS**



**MULTI-USER ECP
AUTOMATED
REVIEW
SYSTEM**

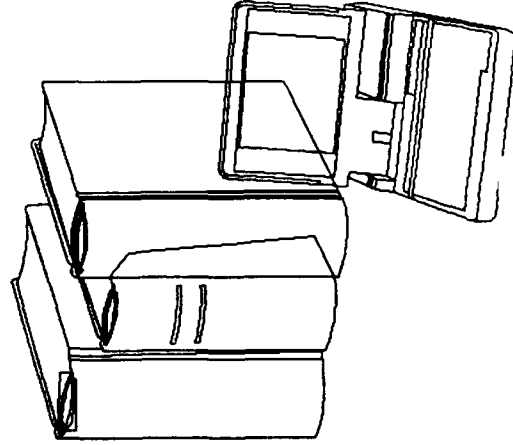
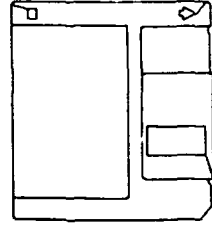


**COMPUTERIZED
MANUFACTURING
(FCIM)**



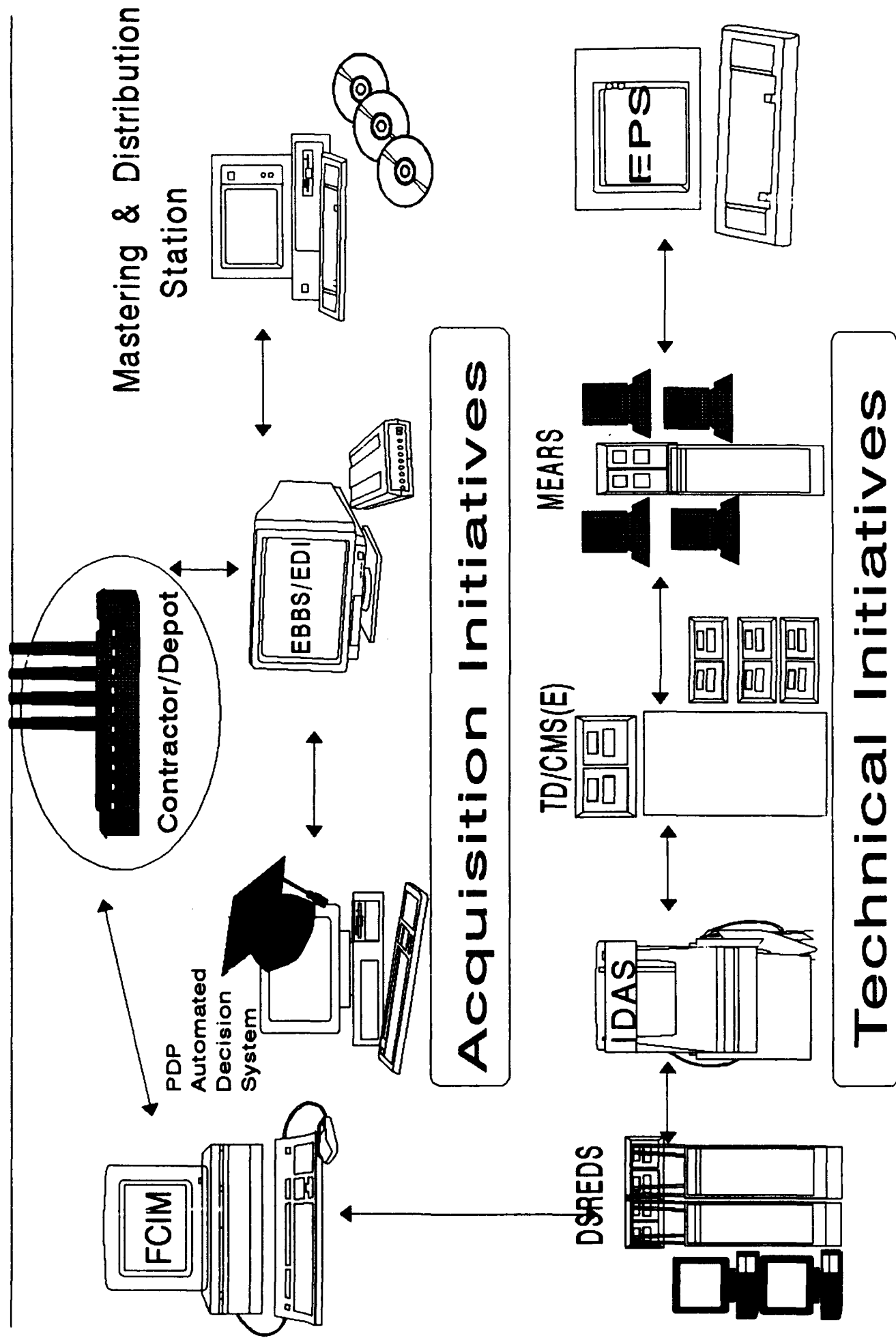
CALS TESTBED

**ENGINEERING
DATA**
DESIGN DATA, SPECS,
MPs, REPORTS, etc.



"TMs"
MANUALS,
LSA DATA,
etc.

LINKING CALS PROCESSES



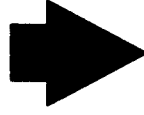
CALS STANDARDS

DoD STANDARD	NATIONAL/INTERNATIONAL STANDARD	APPLICATION
MIL-STD-1840B		Data Interchange, File Management
MIL-STD-1388-1A/2A/2B		LSA/LSAR
MIL-STD-28000	IGES	CAD, Vector Graphics
MIL-M-28001	SGML	Automated Publishing
MIL-R-28002	CCITT 4 RASTER	Raster Scanned Images
MIL-D-28003	CGM	Vector Graphics
PDES		Product Data Exchange
MIL-HDBK-59B		CALS Implementation Guide
MIL-STD-974		Contractor Integrated Technical Information Services

WHERE WE ARE GOING

Logistics

TODAY



DIGITAL
CONTRACT
REQM'TS

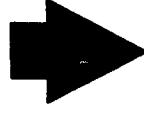
TMS

NEAR
TERM



SGML
CONTRACT
LANGUAGE

MID
TERM



FULL CALS
COMPLIANT
SYSTEM

BASIC
CALS
CONTRACT
LANGUAGE

1388-2B

VALIDATED
SOFTWARE

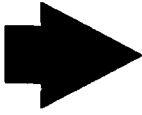
FULL CALS
CONTRACT
LANGUAGE

LSA

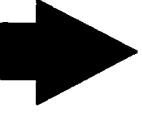
WHERE WE ARE GOING

Engineering Data

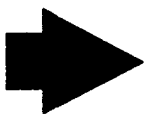
TODAY



NEAR
TERM



LONG
TERM



DRAWINGS

RASTER

RASTER/VECTOR

VECTOR

MP's

MYLAR

DIGITAL/MYLAR

DIGITAL

FCIM

ON-LINE

FULL

30 DAY

TOBYHANNA

CECOM/TOAD

BUILD

(TOAD)

INTERACTIVE

RQM'TS TO

DELIVERY

CONTRACT OPPORTUNITY

Title: Master Pattern Legacy Conversion

Objective: Convert Mylar Master Patterns to Digital Format

**Proposed
Contract
Type** Indefinite Delivery/Indefinite Qty
Contract with Maximum Ceiling

Key Milestones: IFB opened - Apr 94
IFB closed - May 94
(next contract FY-95)

Estimated Value: 50K-100K per year

POC: John Myer
(908) 532-5392

CONTRACT OPPORTUNITY (con't)

Title: Technical Manual Legacy Conversion

Objective: Convert Technical Manuals to Digital Format
Up to 1.4M pages

**Proposed
Contract Type:** Not Identified

Key Milestones: Identify Initial Funding FY-95

Estimated Value: Up to \$500K

POC: Fred Loeser
(908) 532-3016

POINT OF CONTACT

RICHARD ULDRICH
(908) 532-3744

CALS SYMPOSIUM ACRONYM LIST

APBI	Advance Planning Briefing For Industry
APIC	Acquisition Process Improvement Campaign
ARL	Army Research Laboratory
ASCII	American Standard Code For Information Interchange
BPI	Bits Per Inch
CAD	Computer-aided Design
CALS	Continuous Acquisition & Life-Cycle Support
CCITT	Consultative Committee on International Telephony and Telegraphy
CCSO	CECOM CALS Support Office
CD-ROM	Compact Disk-Read Only Memory
CEO	Corporate Executive Officer
CG	Commanding General
CGM	Computer Graphic Metafile
CICS	Customer Information Control System
CITIS	Contractor Integrated Technical Information Service
DCI	Directorate for Corporate Information
DDN	Defense Data Network
DISN	Defense Information Systems Network
DLA	Defense Logistics Information System
DSREDS	Digital Storage and Retrieval Engineering Data System
DTD	Document Type Description
EBBS	Electronic Bulletin Board System
EC	Electronic Commerce
ECP	Engineering Change Proposal
EDI	Electronic Data Interchange
EPS	Electronic Publishing System
FCIM	Flexible Computer Integrated Manufacturing
FDDI	Fiber-Optic Distributed Data Interface
FOSI	Format Output Specification Instance
GDT	Graphic Data Terminal
GUI	Graphical User Interface
HW	Hardware
HD	Hard Drive

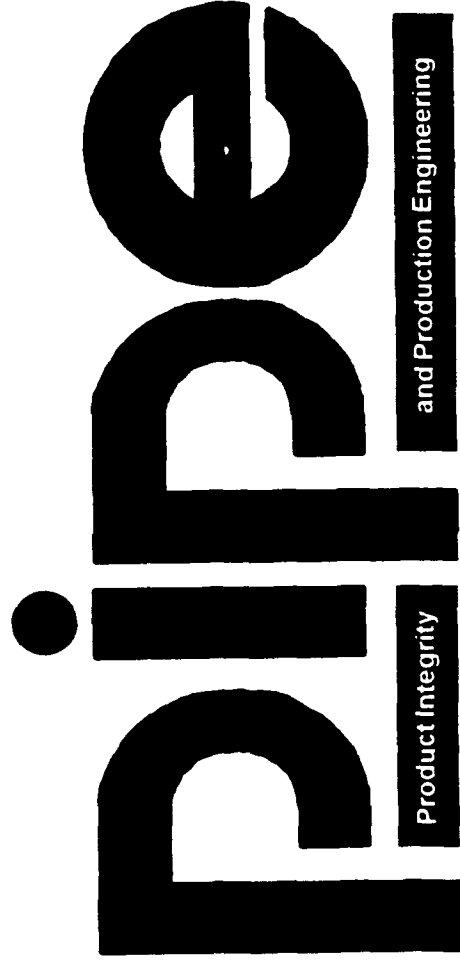
IC	Integrated Circuit
IDAS	Image Display & Access System
IDIQ	Indefinite Delivery/Indefinite Quantity
IDNX	Integrated Digital Network Exchange
IETM	Interactive Electronic Technical Manual
IFB	Invitation for Bid
IGES	Initial Graphics Exchange Standard
ISA	Industry Standard Architecture
IWSDB	Integrated Weapon System Data Base
JCALs	Joint Computer-Aided Acquisition & Logistics Support
JEDMICS	Joint Engineering Data Management Information & Control System
JLSC	Joint Logistics Systems Center
LAN	Local Area Network
LSA	Logistics Support Analysis
LSAR	Logistics Support Analysis Record
MANs	Metropolitan Area Network
MEARS	Multi-User Engineering Change Proposal Automated Review System
MB/S	Megabits Per Second
MHz	Megahertz
MIPA	Multi-Functional Information Processing Activity
MOA	Memorandum of Agreement
MPs	Master Patterns
MS	Microsoft
MVS/XA	Multiple Virtual Storage/Extended Architecture
NAWCADI	Naval Air Warfare Center Aircraft Division - Indianapolis
NSC	Network Systems Corporation
NSN	National Stock Number
OCR	Optical Character Recognition
OS	Operating System
PC	Personal Computer
PCB	Printed Circuit Board
PDPs	Procurement Data Package
PEO	Program Executive Officer
PMR	Provisioning Master Record
QA	Quality Assurance
RAM	Random Access Memory
RFP	Request for Proposal
R&D	Research & Development

SW	Software
SBA	Small Business Administration
SCSI	Small Computer System Interface
SGML	Standard Generalized Mark-Up Language
SNA	System Network Architecture
SYSOP	Systems Operator
TCP/IP	Transport Control Protocol/Internet Protocol
TD/CMS	Technical Data/Configuration Management System
TD/CMS (E)	Technical Data/Configuration Management System - Enhanced
TMS	Technical Manuals
TOAD	Tobyhanna Army Depot
T1	Data Traffic Carrier Access
VGA	Video Graphics Adapter
VHSIC	Very High Speed Integrated Circuit
VHDL	VHSIC Hardware Description Language
WAN	Wide Area Network

NOTES

Commercial Practice Initiatives

J. Michael Ryskamp
Product Integrity & Production Engineering
Directorate



UNCLASSIFIED

AMSEL-LC-ED-CFO

POINT PAPER

SUBJECT: Advanced Planning Briefing for Industry (APBI) Presentation

PURPOSE: To provide information regarding the Product Integrity and Production Engineering Directorate (PIPE) Commercial Practice Initiatives presentation for the 11-12 May 1994 APBI.

FACTS:

- o PIPE coordinated establishment of both the Improved "Military" parts Availability and Selection Working Group (IMPAS-WG) and the ISO 9000 Implementation Process Action Team (ISO 9000 PAT).

- o The APBI presentation covers implementation of commercial initiatives in CECOM procurements and is in two parts. The first discusses use of non-military electronic microcircuits and devices while the second covers implementation of the International Organization for Standardization 9000 series quality standards (ISO 9000).

BRIEFER: J. Michael Ryskamp, GM-1910-14, AMSEL-LC-ED-CFO, 23263.

RELEASED BY:

GERALD O. STOOPS
GM-855-15
Director, Product Integrity and
Production Engineering
25193

ACTION OFFICER:

J. MICHAEL RYSKAMP
GM-14
Chairman, IMPAS Working Group
23263

Commercial Practice Initiatives

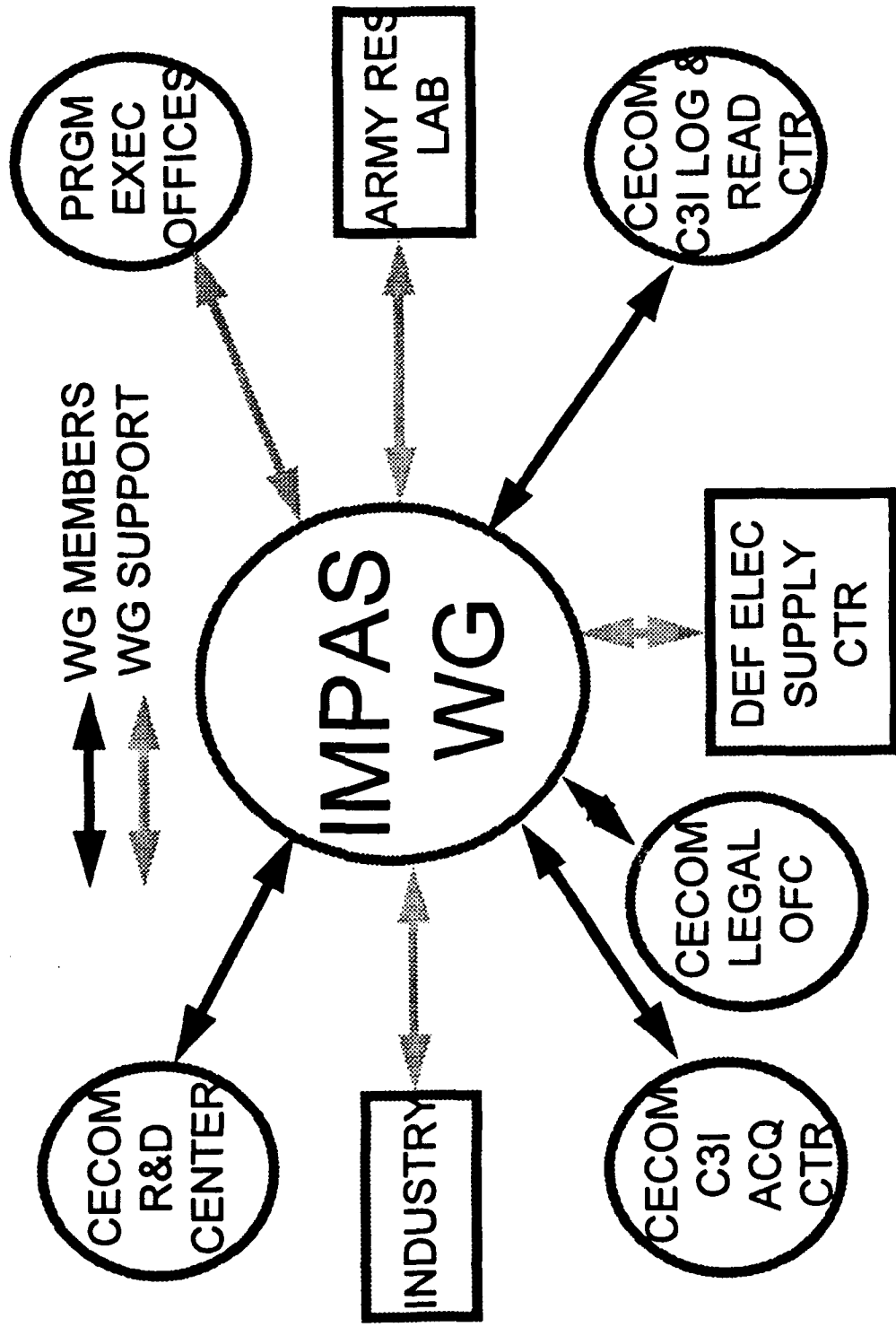
- **Use of Non-Military Electronic Microcircuits/Devices**
- **Implementation of International Organization for Standardization (ISO) 9000/American National Standards Institute (ANSI) Q-90 Quality Standards**

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

- **Improved “Military” Parts Availability
and Selection (IMPAS) Working
Group**
- **CECOM Working Group**
 - **Implementing a Program Enhancing
Availability of Parts/Components**
 - **Using Non-Military Microcircuits and
Components**
- **“Non-Military” - Materiel meeting
military requirements while not being
procured to military specs**

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

PARTICIPANTS



Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

BACKGROUND

- **The military microcircuit market share is shrinking.**
- **The existing military market offers little incentive to parts manufacturers.**
- **Non-availability of military parts results in system supportability issues.**

To adapt we must change our business processes

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

STATUS

- **Benchmarking**
- **Modifying Parts Control Process**
 - **Parts Selection**
 - **Obsolescence Statement of Work**
- **Evaluating Impact on Other CECOM Processes**
- **“Getting the word out”**

Commercial Practice Initiatives

Use of Non-Military Electronics Microcircuits & Devices

OBJECTIVES

Use non-military microcircuits and components

- **Avoid obsolescence issues**
- **Enhance part & component availability**
- **Lower costs**
- **Meet schedule**

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

PROCESS

PHASE I (INTERIM)

- Eliminates preeminence of Qualified Products List (QPL) & adopts Qualified Manufacturer's List (QML)
- Best commercial practices approach - Qualify processes *NOT* product
- Parts selected IAW MIL-STD-454, requirement 64

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

PROCESS

PHASE II

- Contractor selects non-military microcircuits/semiconductors using guidelines of MIL-HDBK-179 (ER)
- Contractor establishes - part selection criteria/supplier evaluation guidelines/qualified supplier list for each device
- Part/supplier selection documented in internal Parts Control Program Plan (PCPP)
- Non-Military devices are allowed but use of available QPL/QML devices is stressed

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

PROCESS

PHASE III

- Expands upon PHASE II
 - Plan to be developed by contractor for *ALL* components
 - Parts selection based upon MIL-HDBK-179 concepts or generally accepted commercial replacement
 - Contractor defines device/supplier selection criteria
- Evolutionary development following PHASE II

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

PROCESS

PHASE III (Cont'd)

ALTERNATIVE

- **Use form/fit/function based upon end-item requirements**
- **Device selection driven by higher-level requirements**
- **Device selection is contractor responsibility**
- **Part level technical documentation not required**
- **Higher level performance requirements & parameters documented & used for procurement**

Commercial Practice Initiatives Use of Non-Military Electronics Microcircuits & Devices

MILESTONES

- Interim policy implementation...4QFY94
- Final policy implementation.....1QFY95

Commercial Practice Initiatives Implementation of ISO 9000

CECOM established the Process Action Team (PAT) to implement the International Organization for Standardization's 9000 series quality standards.

Commercial Practice Initiatives Implementation of ISO 9000

THE STANDARDS

- **US Equivalents to ISO 9000 Standards are ANSI/ASQC Q-90 thru Q-94**
- **Q-90 - Guide for Selection & Use**
- **Quality Assurance Models**
 - **Q-91 - In Design/Development**
 - **Q-92 - In Production**
 - **Q-93 - In Final Test**
- **Q-94 - Guide for Quality Management**

Commercial Practice Initiatives Implementation of ISO 9000

CECOM PROCESS

CHOOSE
MIL-Q OR Q-91/2

SUBMIT:
Certification

PRE-AWARD
Have it or get it!

POST-AWARD
Live by it!

Commercial Practice Initiatives Implementation of ISO 9000

The Future

- **Use Q-92 as MIL-I-45208A alternative**
 - **CECOM Sees No Benefit in Standard “Tailoring Down” for MIL-I Purposes**
 - **Q-92 May be “Descoped” Contractually During Contractor Transition (MIL-I to Q-92)**
- **Use Q-93 for NDI/COTS When Final Test is Needed**
- **Implement in CECOM contracts beginning in 4QFY94**

Commercial Practice Initiatives

POC: J. Michael Ryskamp
Commander, U.S. Army CECOM
AMSEL-LC-ED-CFO
Fort Monmouth, NJ 07703-50023
908-532-3263 Fax 908-532-1413
E-MAIL: ryskamp%doim6@monmouth.emh3.
army.mil

NOTES

SESSION II

"SEE AND HEAR"

MODERATOR

COL THOMAS L. VOLLRATH
PROGRAM EXECUTIVE OFFICER
INTELLIGENCE AND ELECTRONIC
WARFARE

IEW

PROGRAM EXECUTIVE OFFICE

Session II

“See & Hear”

Moderator:
COL Thomas Vollrath
PEO Intelligence & Electronic Warfare

IEW

PROGRAM EXECUTIVE OFFICE

"See & Hear"

Agenda

Topic	Speaker/Organization
Intercept & Tactical Intelligence Data Fusion Technology	Mr. Ron Dlugosz IEW Directorate
Proposed Sensors Advance Technology Demonstrations	Mr. Larry Fillian NV&EO Directorate
JSTARS Ground Station Module	COL James Mitchell PM JSTARS
Firefinder P31 Program	Ms Maureen Molz NV&EO Directorate
IEW Common Sensor Systems	Mr. William Hayden PM Signal Warfare
Electronics for the Information Age	Dr. Clarence Thornton Army Research Laboratory

NOTES

INTERCEPT AND TACTICAL INTELLIGENCE DATA FUSION TECHNOLOGY

MR. RONALD DLUGOSZ

COMMUNICATIONS-ELECTRONICS COMMAND
RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
INTELLIGENCE AND ELECTRONIC WARFARE
DIRECTORATE

UNCLASSIFIED

30 March 1994

POINT PAPER

SUBJECT: Intelligence and Electronic Warfare Technology Initiatives

OBJECTIVE: To provide information on the CECOM Intelligence and Electronic Warfare Directorate's (IEWD's) interest and contract opportunities in the areas of Intercept Technology, Tactical Intelligence Data Fusion Technology, and Electronic Warfare Technology. We also want to acquaint industry with the IEW Technical Assessment Center at Fort Huachuca, AZ.

FACTS: IEWD is developing the technologies necessary for U.S. Army systems to locate and exploit hostile command, control, communications (C³) and electronic systems; and, to process, analyze and report battlefield intelligence.

This briefing describes the technology programs that support these three areas. It also provides general timelines for industry involvement and current funding ranges.

BRIEFER: Intercept and Tactical Intelligence Data Fusion Technology -
Mr. Ronald J. Dlugosz, Chief, Advanced Concepts Division, AMSEL-RD-IEW-TA-M, (908) 554-5426;
DSN 996-5426

Electronic Warfare Technology and IEW Technical Assessment Center -
Mr. Kurt Kovach, Chief, Simulation and Modeling Branch, Advanced Concepts Division,
AMSEL-RD-IEW-TAS-M, (908) 544-5294, DSN 996-5294.

ACTION OFFICER:
Linda S. Monroe
GS-9/PA
Industrial Liaison
(703) 349-7370;
DSN 229-7370

INTERCEPT TECHNOLOGY

INTERCEPT TECHNOLOGY

DESCRIPTION

Detect, demodulate and geo-locate hostile command, control and communications (C3); and radar systems

INTERCEPT TECHNOLOGY

STATUS

- Utilizing narrow bandwidth communication communication link
- Exploiting modem modulations
- Intercepting architectures and hardware adaptable for wideband and narrowband modulations

INTERCEPT TECHNOLOGY

OBJECTIVES

- Develop interference rejection and suppression techniques
- Develop small, efficient and broadband receiving antennas
- Improve super-resolution direction finding algorithms
- Improve direction finding accuracies
- Develop exploitation techniques against modern signals
- Increase on-board sensor processing

INTERCEPT TECHNOLOGY

REQUIREMENTS

- Increase range of ground based intercept systems
- Handle current and projected target signals
- Automate the signal intercept process
- Reduce size and power requirements of intercept equipment
- Increase emitter geo-location accuracy

INTERCEPT TECHNOLOGY

PAYOFFS

- Maximum use of commercial specification (COM-SPEC) testbeds and prototypes
- Cost effective proof-of-concept demonstrations
- Transition technology to Army intercept systems, such as family of IEW Common Sensors
- Common hardware/software modules for rapid integration into the R&D community.

INTERCEPT TECHNOLOGY

PAYOFFS (Continued)

- **Maximum use of common modules**
- **Automated collection**
- **Maximum processing on-board the sensor**
- **Capability for real time reporting of targets**

INTERCEPT TECHNOLOGY MILESTONES - FY95 AND BEYOND

- **Interference reduction utilizing super-resolution techniques**
- **Wideband modulation exploitation**
- **Multiple cooperative receivers producing coordinated pulse descriptor word**
- **Automated signals intercept, recognition and collection**
- **Accurate geo-location of advanced communications and non-communications signals**

INTERCEPT TECHNOLOGY CONTRACT OPPORTUNITY

- Title: Advanced Intercept Techniques
- Objectives:
 - Improve direction finding accuracies
 - Exploitation of modem signals
 - Automate the signal intercept process
- Type: Multiple Competitive - CPFF contracts from BAA and SBIR solicitations
- Schedule: Award dates - FY95-96
(BAA closes Jan 95 for FY95 award)
- Estimated Value: Approximately \$1M for FY95-96
- POC/Telephone No.: Jim Yolda (703) 349-6911

INTERCEPT TECHNOLOGY

CONTRACT OPPORTUNITY

- Title: Next Generation ESM Processor
- Objectives: Develop digital processor using CASE/CAE tools for next generation of ELINT/ESM processor. It will utilize all of the additional parameters for each pulse measured by state-of-the-art ELINT/ESM receivers (e.g., intrapulse, chirp/chip rate, etc.) and provide real time TACELINT reports.
- Type: Competitive CPFF
- Key Milestones: Award date - FY97
- Estimated Value: Approximately \$1M for prototype phase FY97-98
- POC/Telephone No.: Dr. Frank Elmer (908) 544-5956

TACTICAL INTELLIGENCE DATA FUSION

TACTICAL INTEL DATA FUSION

DESCRIPTION

Association, correlation, and combination of data and information from multiple sources to generate battlefield intelligence

TACTICAL INTEL DATA FUSION

STATUS

- General Fusion
 - Upgrade ASAS Warlord prototype with Testbed Fusion Technology
 - Terrain analysis server/parallel processing
 - Developing correlation algorithm module and ASAS Warlord Interface Prototype for Common Ground Station ATD
 - Initial release of testbed products
 - Defining fusion processing flows
 - Developing Overlay Reasoning Module

TACTICAL INTEL DATA FUSION

STATUS (Continued)

- Sensor Placement
 - Developed user friendly - soldier machine interface
 - Optimized supporting propagation models/parallel processing
 - Ported software to database shell, JPL-MAP's, IPC and MMI
 - Sensor placement annealing algorithm
 - Host software on Sun SPARC
 - Demonstrating software at IEW Technology Assessment Center

TACTICAL INTEL DATA FUSION

OBJECTIVES

- Transition data fusion research products into testbed efforts and tactical intelligence data fusion systems
- Provide maturing products to technology demonstrations and user driven prototypes
- Automate the intelligence generation process
- Efficient intelligence data base management systems

TACTICAL INTEL DATA FUSION REQUIREMENTS

- **Sensor allocation/Sensor management**
- **IEW Synchronization/Collection Management**
- **Multiple hypothesis management**
- **Computational geometry**
- **Hybrid data base management techniques**
- **IPB overlay generation**

TACTICAL INTEL DATA FUSION

REQUIREMENTS (Continued)

- CI/HUMINT Prototype
- Technologies to support Common Ground Station and All Source Analysis System
- Terrain and feature reasoning
- Explore other innovative intelligence data fusion technologies

TACTICAL INTEL DATA FUSION

PAYOFFS

- Provide more timely and accurate tactical intelligence
- Lower soldier skills required
- Increase productivity via automation
- Provide the Commander with information required to make timely decisions on the battlefield

TACTICAL INTEL DATA FUSION

MILESTONES - FY95 AND BEYOND

- Spatial/map reasoning algorithms
- IEW synchronization matrix approaches
- Port terrain reasoning tools to N-Cube
- Integrate with ASAS, IEWCS and ETW software
- Add ECM capability to Sensor Placement Tools
- Transition correlation and ASAS - Warlord interface prototypes to Common Ground Station ATD

TACTICAL INTEL DATA FUSION

MILESTONES - FY95 AND BEYOND (Cont'd)

- Upgrade *ASAS* Warlord Prototype with Testbed Fusion Technologies
- Tactical multi-media and virtual reality MMI techniques
- Multi-media IPB intelligence products
- Complete *AMBISS* AI module
- Fusion data base software enhancements

TACTICAL INTEL DATA FUSION

CONTRACT OPPORTUNITIES

- Title: Tactical Intelligence Data Fusion Techniques
- Objectives:
 - Automate the intelligence generation process
 - Object, Situation, Threat and Process Refinement
 - Situational awareness
 - Efficient intelligence database management techniques
- Type: Multiple Competitive - CPFF contracts from BAA and SBIR solicitations
- Schedule: Award dates - FY95-96
(BAA closes Jan 95 for FY95 award)
- Estimated Value: Approximately \$2M for FY95-96
- POC/Telephone No.: Dave Grubb, 703-349-7566

FUNDING PROFILE

YEAR	TITLE	APPROX AMOUNT (\$ IN MILLIONS)
FY95-97	INTERCEPT TECHNOLOGY	2
FY95-97	TACTICAL INTEL DATA FUSION	2
	TOTAL	4

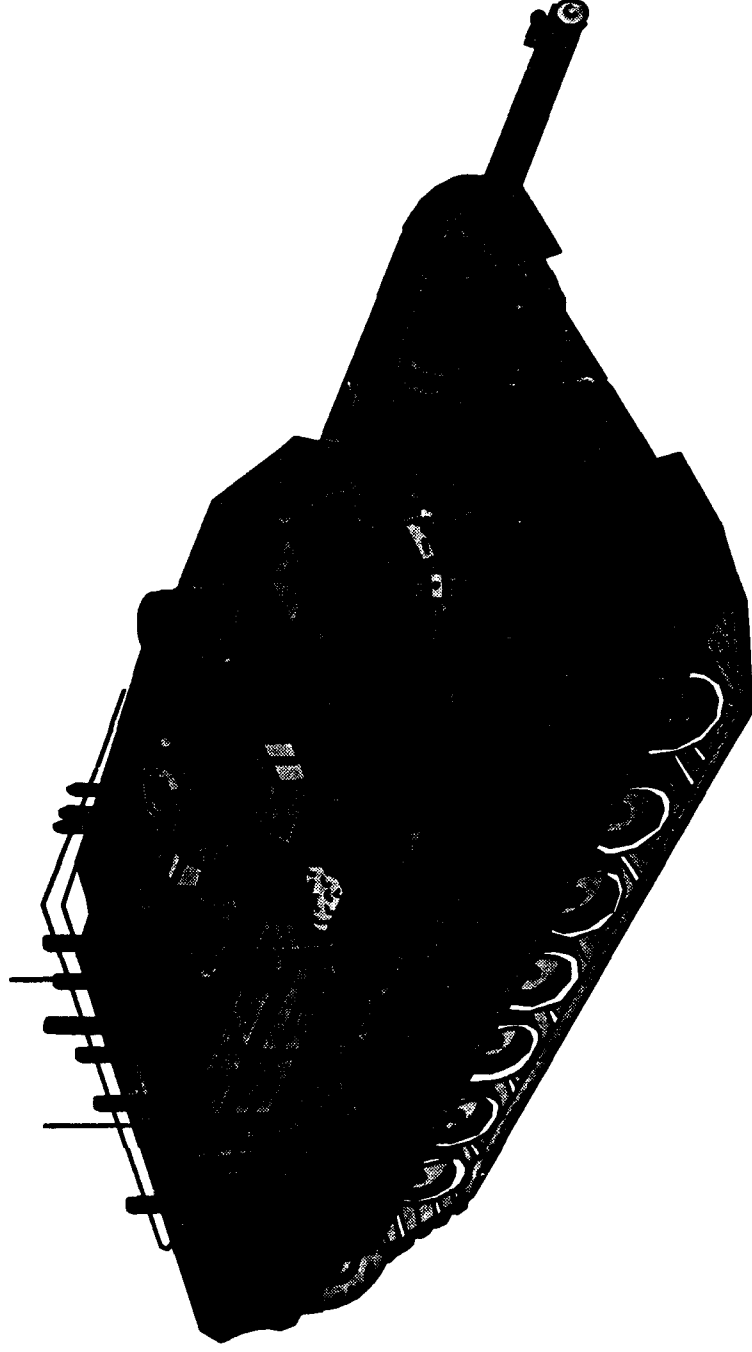
NOTES



US ARMY CECOM

**Research, Development & Engineering Center
Night Vision and Electronic Sensors Directorate**

**"A new way of doing business"
government and industry team**



**Mr. Larry L. Fillian
Associate Director, Operations**

Unclassified



15 April 1994

POINT PAPER

SUBJECT: "A New Way of Doing Business" - Government and Industry Team

OBJECTIVE: Provide Industry with Information on Business Opportunities within the US Army CECOM RDEC Night Vision and Electronic Sensors Directorate.

FACTS: This paper presents an overview of the Government and Industry Team on the M1 Tank 2nd Generation Thermal Sight Concept Evaluation Program. The M-1 Thermal (M-1T) program consisted on 4 sub-programs to upgrade the sensor systems on the Army's Main Battle Tank. They consisted of:

1. an upgrade to the thermal infrared sensor to a 2nd generation FLIR,
2. improvements to the laser rangefinder,
3. improvement to the target symbology,
4. CCD television.

This briefing discusses the government and industry team assembled to work on the program and its development of an improved FLIR/Laser/TV system for use by the US Army.

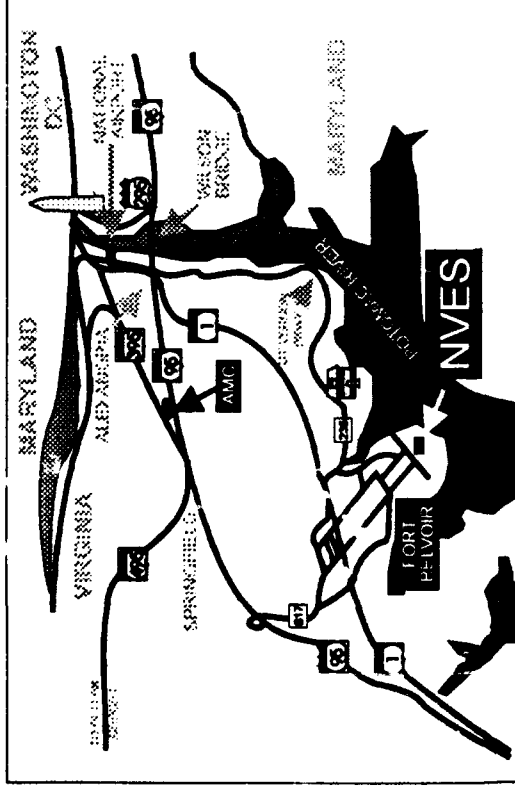
The briefing presents the key elements needed for a successful government/industry team.

It presents 5 programs that will utilize the government and industry team concept to develop surrogate hardware for established Advanced Technology Demonstrations (ATD).

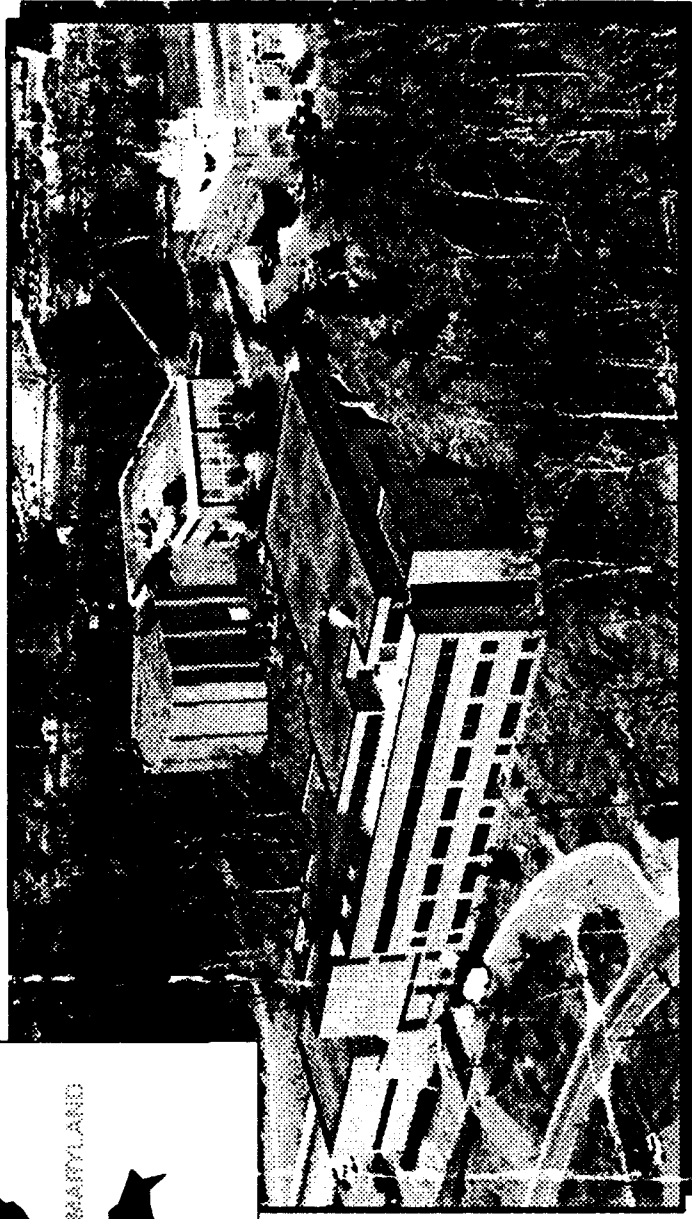
BRIEFER: Mr. Larry L. Fillian
Associate Director, Operation
Night Vision and Electronic Sensors Directorate
ATTN: AMSEL-RD-NV-D
COMM: 703-704-1168

ACTION OFFICER
Thomas T. Steck
Resource Management Division
COMM: 703-704-1188

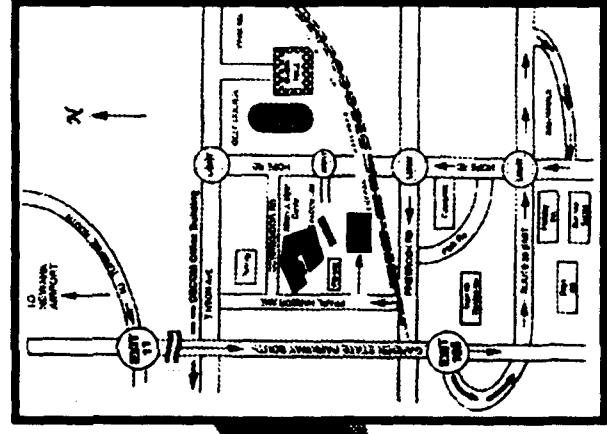
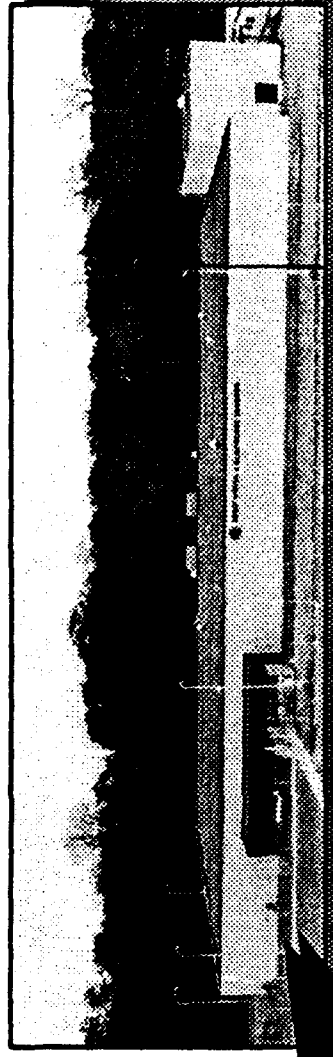
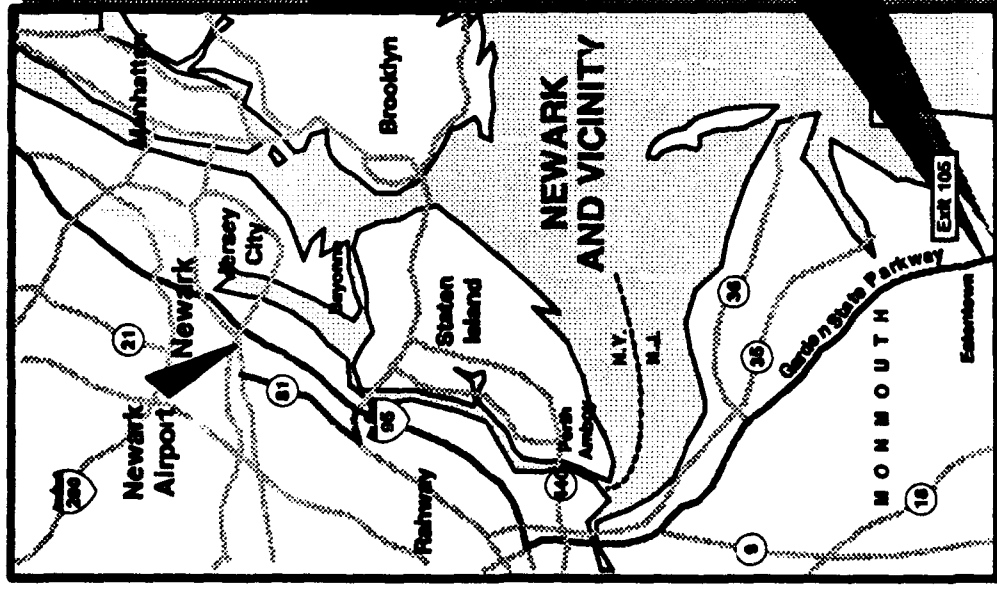
Night Vision and Electronic Sensors Directorate



Location of the Night Vision and
Electronic Sensors Directorate
Fort Belvoir, VA

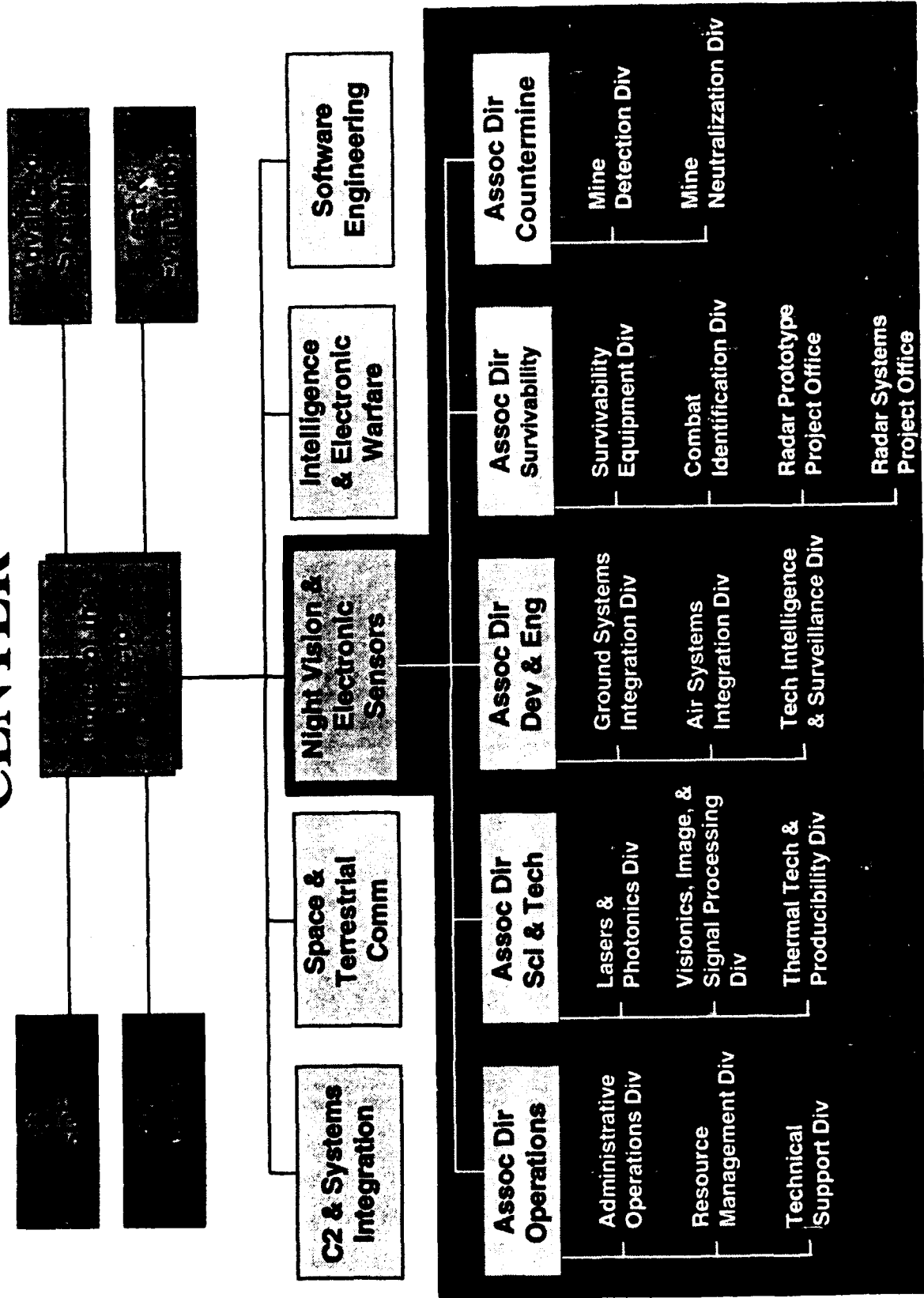


Night Vision and Electronic Sensors Directorate



Location of the
Night Vision
Electronic
Sensors
Directorate
Fort Monmouth,
NJ

CECOM RESEARCH, DEVELOPMENT & ENGINEERING CENTER



Night Vision and Electronic Sensors Directorate

Functional Areas

- Aided target recognition
- Anti-fratricide (Combat ID)
- Countermeasures (EO,IR,RF)
- Remote mine detection/neutralization
- Battlefield deception
- E - O measurement and signature intelligence
- Lasers
- Low cost/low observables
- Optics/image intensification
- Performance modeling/analysis
- Physical security
- Radiac
- Radar
- Sensor fusion
- Survivability equipment
- Thermal imaging

Night Vision and Electronic Sensors Directorate Science and Technology

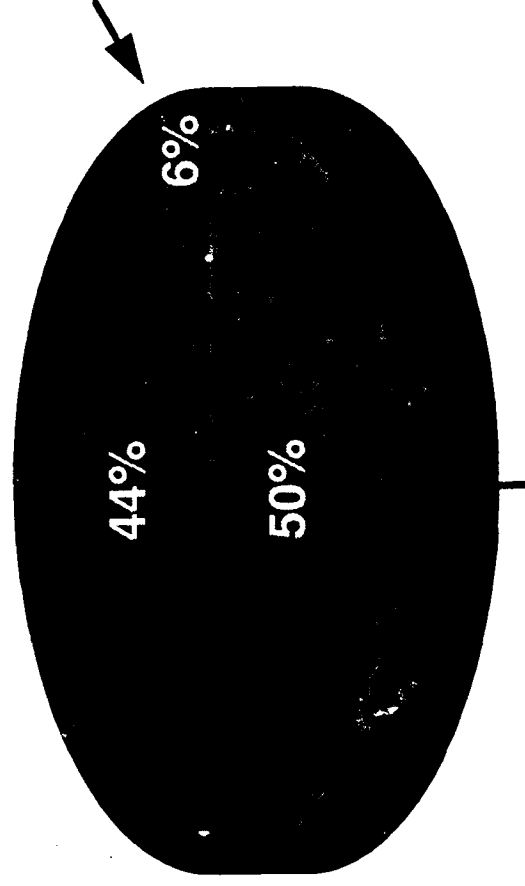
Core Technologies

- Image displays
- High EFF laser sources
- ADV modeling
- Synthetic environments
- Simulation
- Sensor evaluation
- ADV focal plane arrays
- Sensor fusion
- MMW radar
- Processors/sensor fusion
- Advanced optics
- Countermine
- Low cost/low observables

Investment Strategy

Producibility Techniques

- Manufacturing science
- IPPD



Demonstrators

- Aviation
 - Advanced helicopter pilotage
 - Obstacle avoidance system (OASYS)
 - Radar deception & jamming
 - Multi sensor aided target
 - ADV image intensification
- ADV land combat
 - AIMS
 - 2nd gen tank sight
 - Integrated sight modules
 - Remote sentry
 - Hunter sensor suite
 - Target acquisition sensor suite
 - Enhanced survivability sensor suite
 - Combat ID
- Air defense
 - Electronic Integrated sensor suite
 - Masked target kill
 - Artillery
 - Bistatic radar
 - Engineering and mine warfare
 - Close-in manportable
 - Off route smart time
 - Countermine TLD

Night Vision and Electronic Sensors Directorate

"A New Way of Doing Business" Government and Industry Team

Government and Industry Teaming Arrangements What Programs Fit

- In house surrogates to demonstrate early technology integration
- Core of experts focused on one goal/objective
- Low to moderate risk exit criteria established by government/industry
- Provides technology learning experience to enhance government engineers smart buyer approach
- Provides industry with insight to overall concept
- Reduces risk of development cycle through lessons learned

Night Vision and Electronic Sensors Directorate

"A New Way of Doing Business" Government and Industry Team

M-1 Tank Thermal Sight Program A Successful Government/Industry Team

Objectives

Integrate advanced electro-optical technology into M-1 Gunner's Primary Sight to provide significantly improved target acquisition:

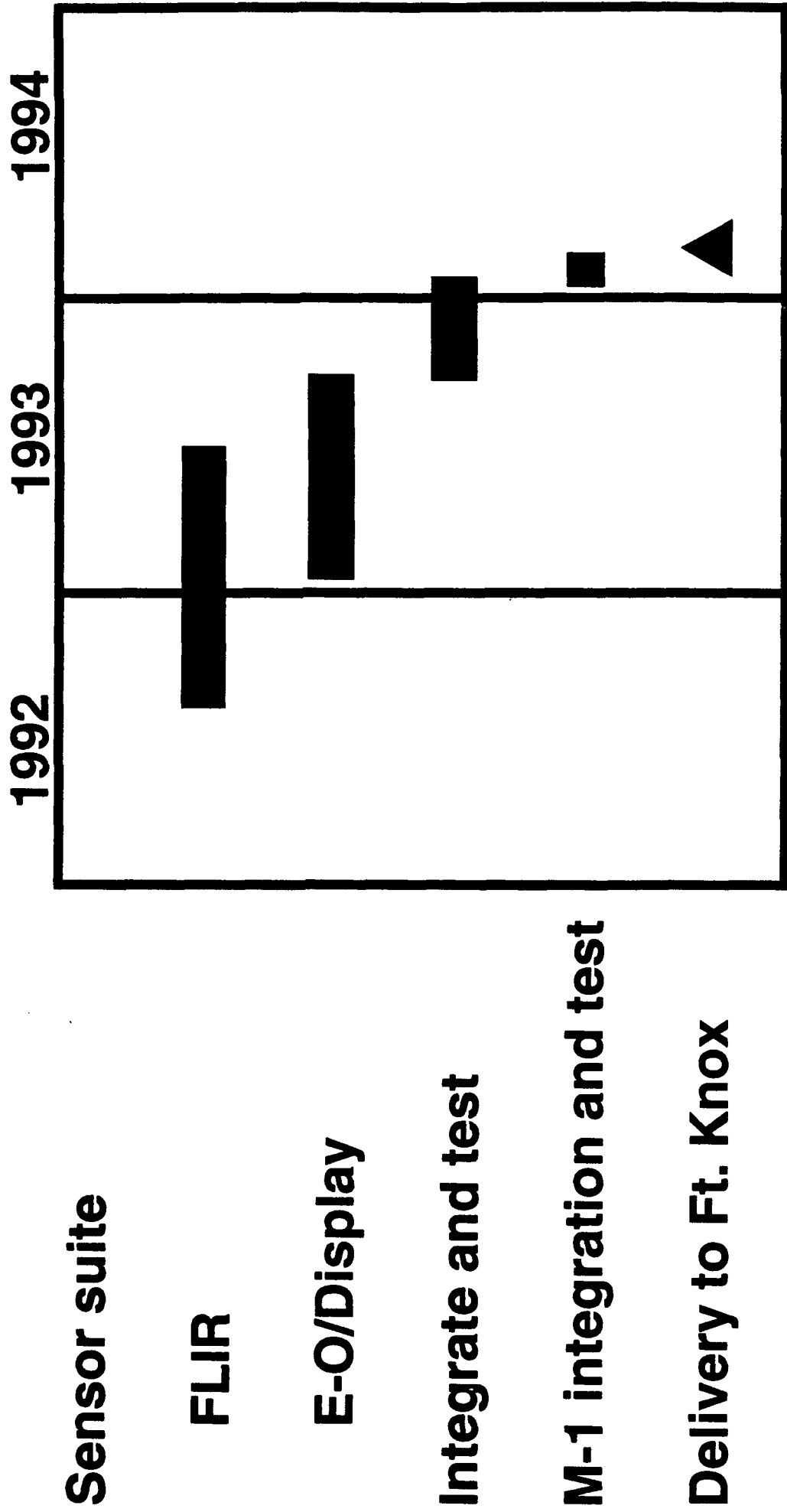
- Second generation FLIR
- CCD television
- Eyesafe laser rangefinder

Install the system into an M-1 Abrams Tank and deliver it to Ft. Knox for USAARMC concept evaluation program

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M-1 Thermal Program - Schedule



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"A New Way of Doing Business" Government and Industry Team

M-1 Thermal Program Approach

Government and Contractor Team

Night vision and electronic sensors directorate

QuesTech, Inc.

Fibertech, Inc.

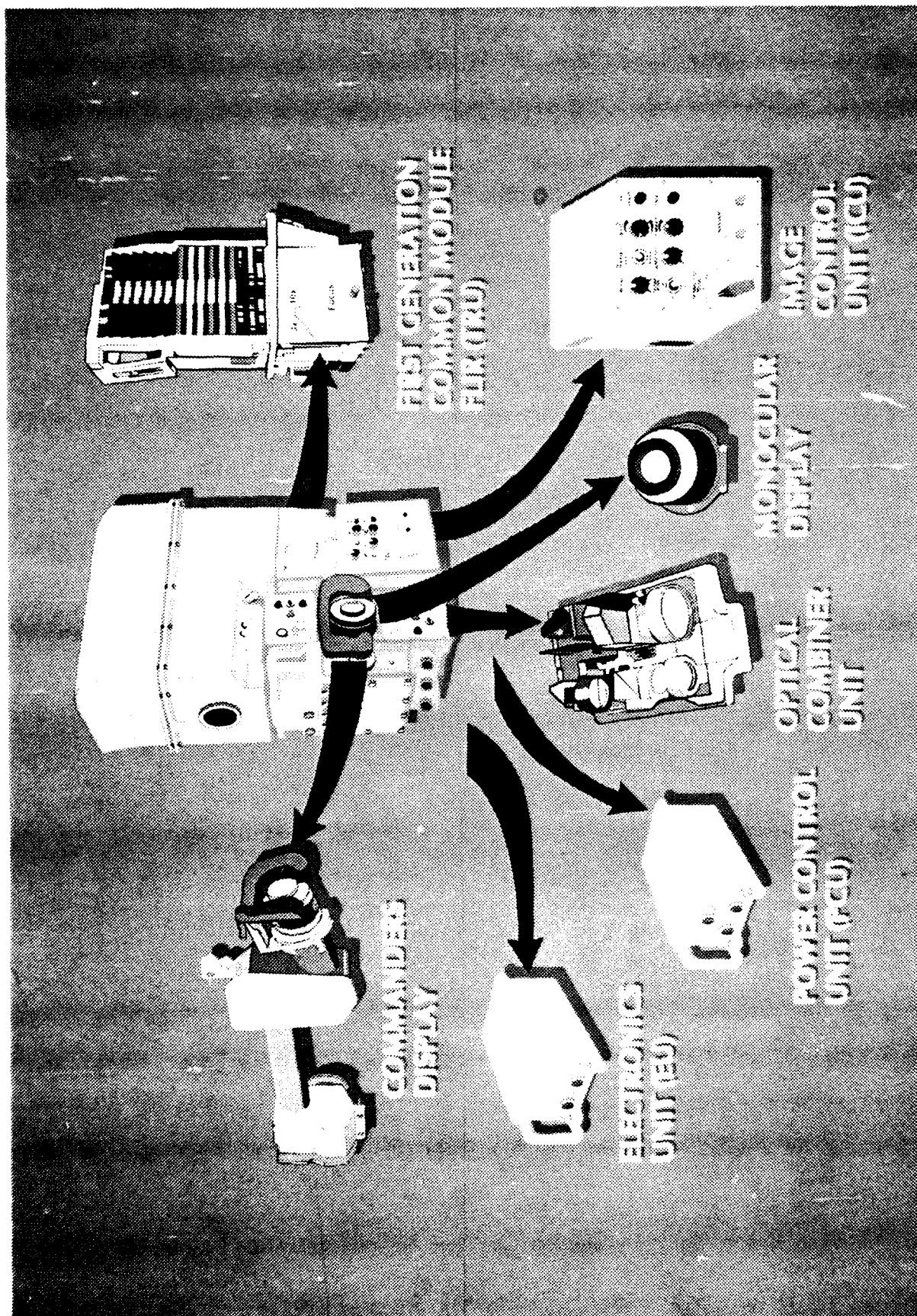
Texas Instruments, Inc.

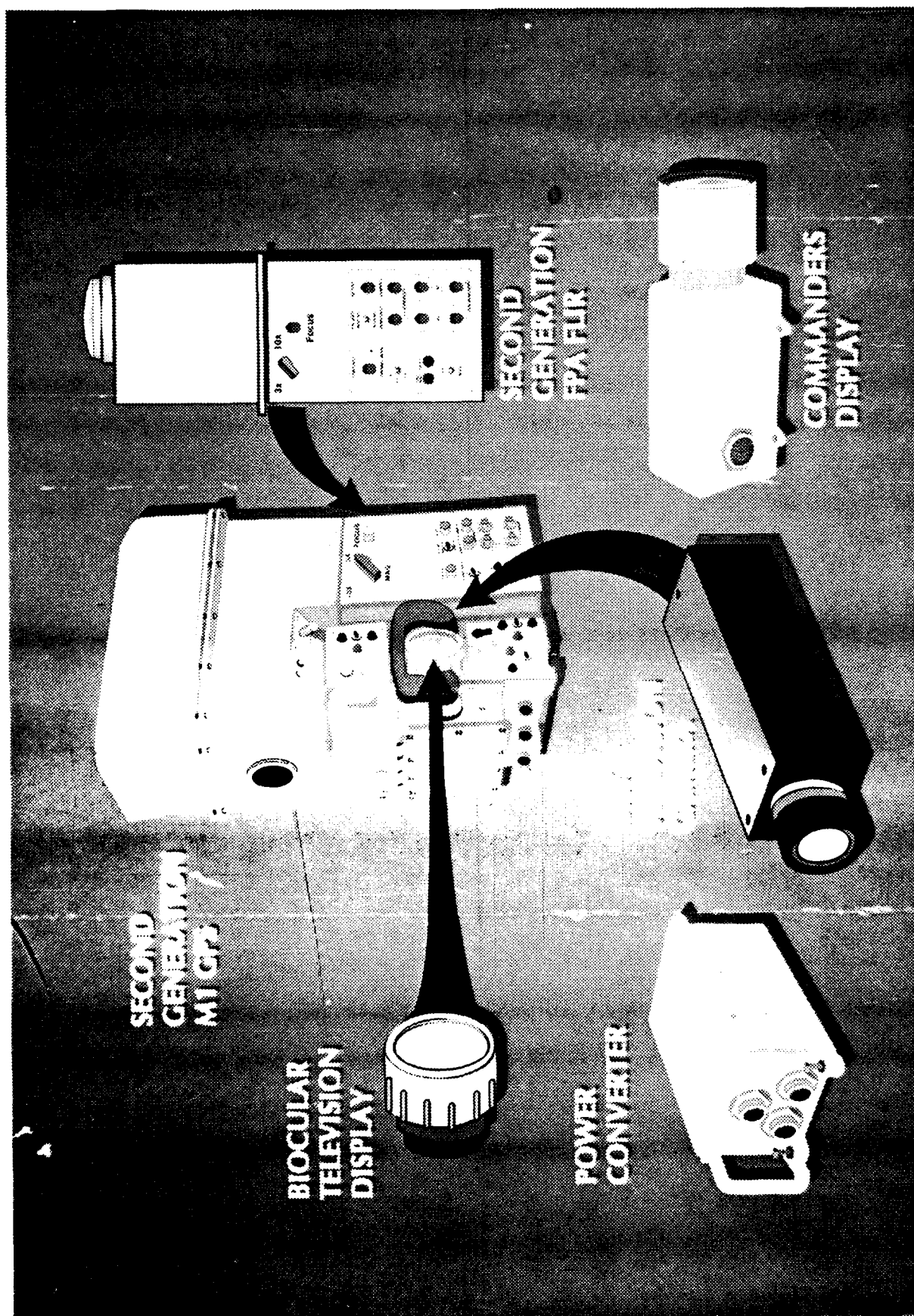
IMO Industries/VARO Inc

IST Inc.

Diversified Optical Products Inc.

- To design, fabricate, and integrate the M1T into the USAARMC provided M-1 Abrams Main Battle Tank
- Conduct road and firing tests
- Provide system and technology support to USAARMC for Concept Evaluation Program (CEP)



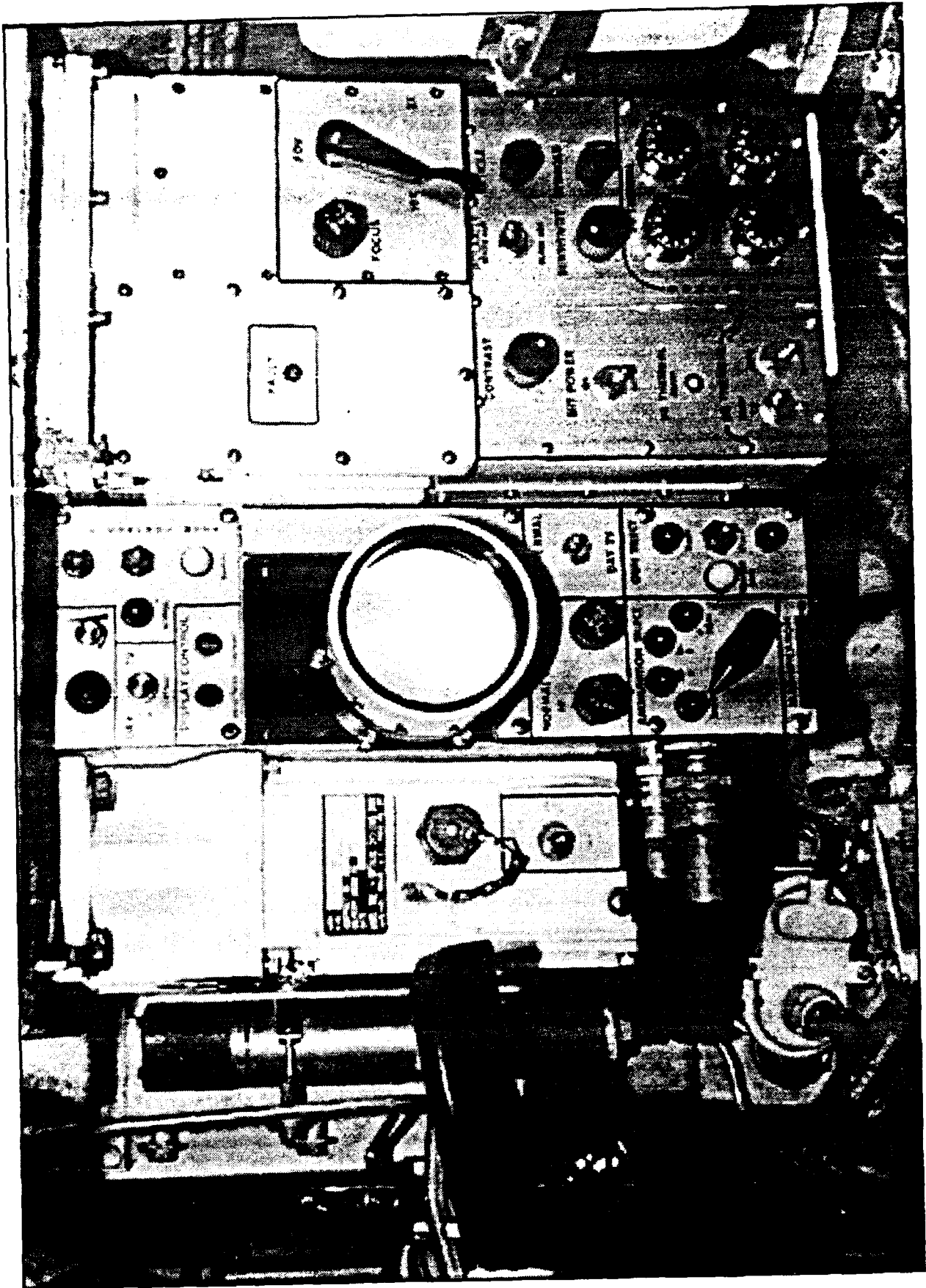


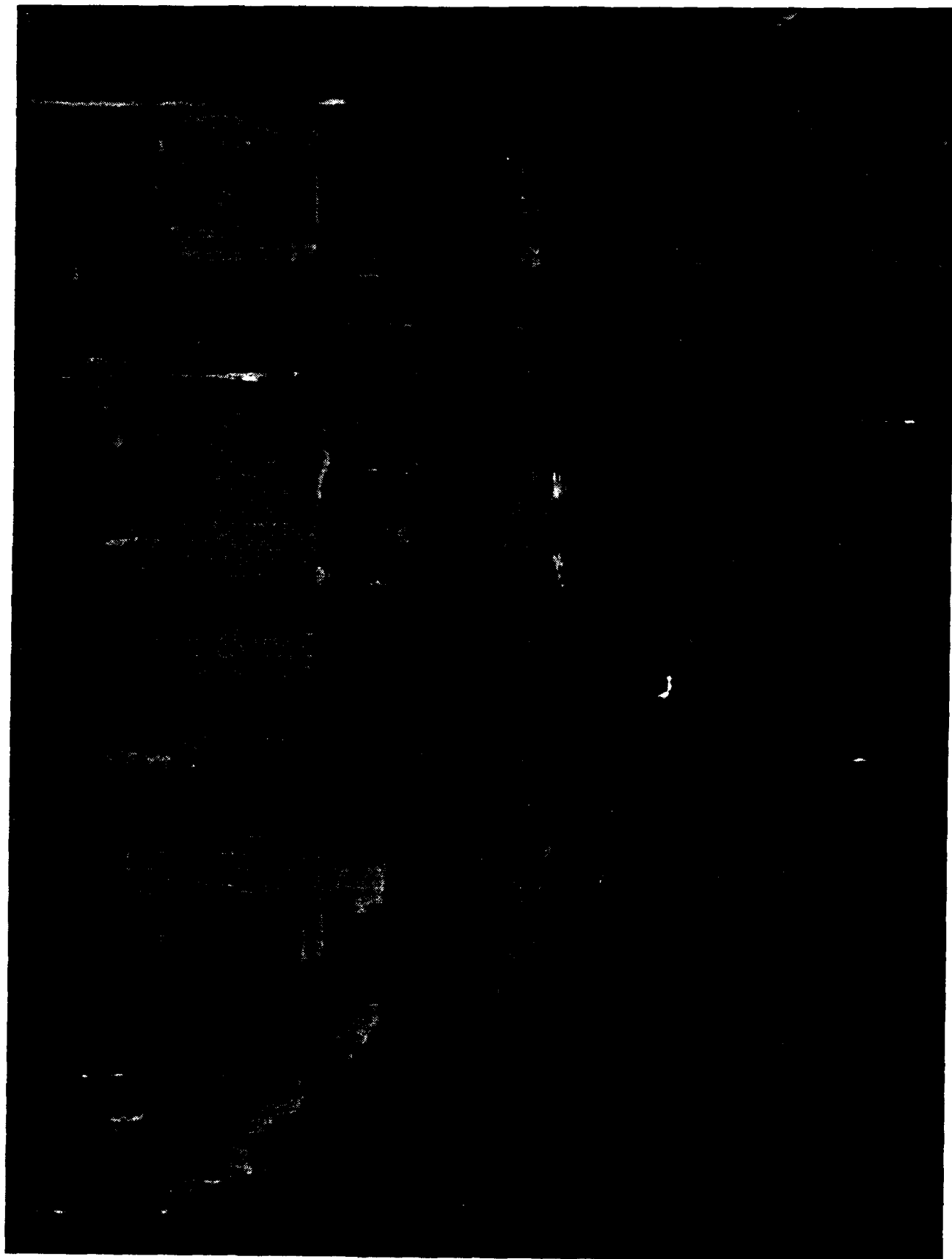
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M-1 Thermal Program - Sensor Characteristics

	<u>M-1 GPS</u>	<u>M-1 Thermal</u>
FLIR	Common Module	M-1 Thermal
Head/Optics	M-1 GPS 1st Gen	2nd Gen
Detector	120x1 HgCdTe	240x4 HgCdTe
Electronics	Analog	Digital
Video	Non standard	RS-170
Field of view	2.5 x 5.0 deg	2.0 x 2.6 deg
	8.0 x 16.0 deg	6.0 x 7.8 deg
Magnification	10 & 3 power	12 & 4 power
Day Sight	Telescope	CCD TV
Rangefinder	Nd:YAG (1.06 μ m)	Eyesafe (1.54mm)
Displays		
Gunner	Monocular CRT and DV Eyepiece	Biocular CRT
Commander	Elbow from GPS	Biocular CRT
Reticle	Projected	Digital





Night Vision and Electronic Sensors Directorate

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M-1 Thermal Program - Cost Chart

Cost (\$K) External

\$755	TI for 2nd Gen FLIR components
\$250	QuestTech for technical support and subcontracts

Cost (\$K) Internal

\$300	NVESD (labor, M&S, travel)
<hr/>	
\$1305	

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“A New Way of Doing Business” Government and Industry Team

Potential Programs for Government and Industry Teaming

- M-1 Thermal II Surrogate
- Hunter Sensor Surrogate
- Remote Sentry Sensor Surrogate
- Countermine Detection Sensor Surrogate
- Masked Target Kill Sensors Surrogate

Night Vision and Electronic Sensors Directorate

"A New Way of Doing Business" Government and Industry Team

M-1 Thermal II Surrogate

Potential Components

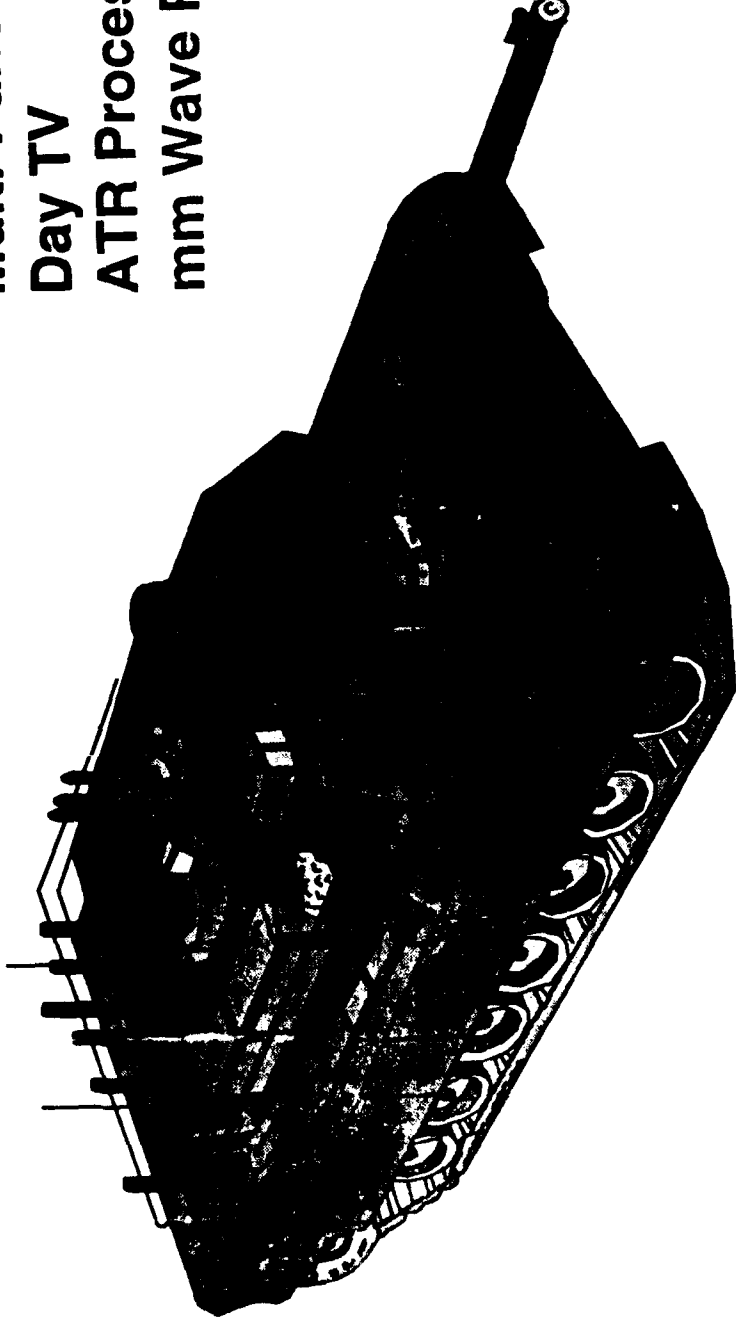
2nd Gen FLIR

Multi-Function Laser

Day TV

ATR Processor

mm Wave Radar MTI/STI





CECOM RDEC

Night Vision and Electronic Sensors Directorate



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Contract Opportunity

Title: M-1 Thermal II Surrogate

Objective: Build in-house surrogates to gain technical experience and learn lessons in support of the Target Acquisition ATD. Demonstrate early integration of Gen II FLIR and Advanced Processors with ATRs coupled with multi-function Lasers and/or mm wave Radar. Provide surrogate hardware for Advanced Warfighting Demonstrations (AWD)/ Advanced Warfighting Experiments (AWE).

Proposed contract type: TBD

Key milestones:	Contract award: 1QFY95
	Contract length: 18-24 months
Estimated value:	\$3M-\$5M
POC telephone:	Mr. Thomas R. Bowman, Jr. 703-704-1243

All contract actions are dependent upon receipt of FY95 funds.

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CECOM RDEC

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Contract Opportunity

Title: Hunter Sensor Surrogate

Objective: Build in-house surrogates to gain technical experience and learn lessons in support of the Hunter Sensor Suite (HSS) ATD. Demonstrate early integration of Gen II Flir, acoustic sensors, Advanced Processors with ATRs, and image/targeting data transmission. Provide surrogate hardware for Advanced Warfighting Demonstrations (AWD)/ Advanced Warfighting Experiments (AWE). Integrate HSS technology into two Hunter Sensor Platforms for use in the RFPI Early Version Demo and the EFOG-M ACTD Program

Proposed contract type: TBD

Key milestones: Contract award: 3QFY95

Contract length: 12-15 months

Estimated value: \$3M-\$5M

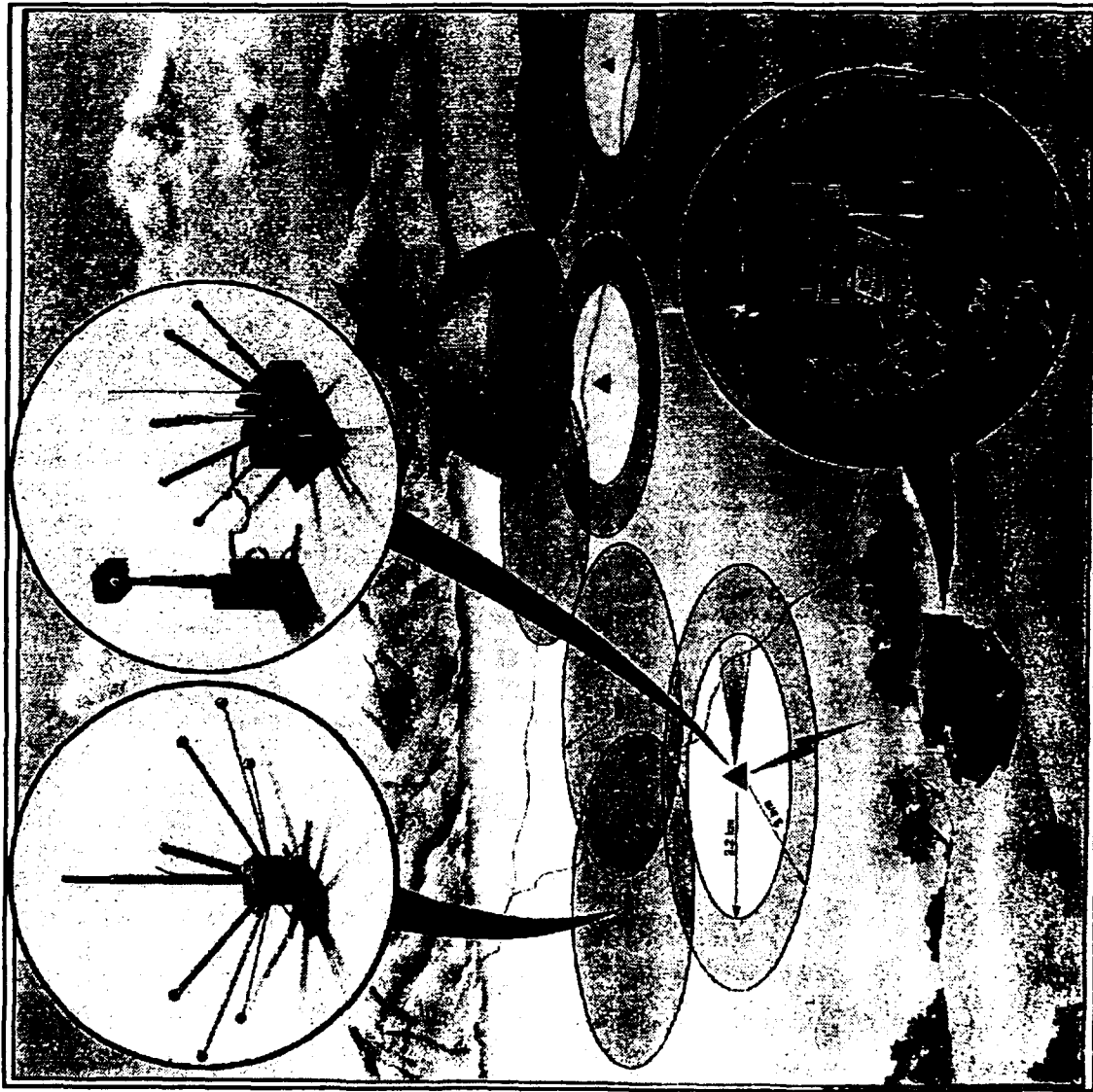
POC telephone: Mr. Thomas E. Smith
703-704-1219

All contract actions are dependent upon receipt of FY95 funds.

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Remote Sentry Sensor Surrogate



Potential Components

Uncooled FLIR
CCD Camera
Laser Rangefinder
GPS
Electronic Compass
Programmable Processor
Controller
Electronic Pan & Tilt Tripod
RF Comm
Image Compression Capability
Cueing Sensors



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Contract Opportunity

Title: Remote Sentry Sensor Surrogate

Objective: Build in-house surrogates using FLIRs, CCD Cameras, GPS, Laser Range Finders, Electronic Compasses, Data Compression, and RF Commo to gain technical experience and learn lessons to aid the Remote Sentry ATD. Provide surrogate hardware for Advanced Warfighting demonstrations (AWD)/Advanced Warfighting Experiments (AWE)

Proposed contract type: TBD

Key milestones: Contract award: 1QFY95

Contract length: 12-18 months

Estimated value: \$1M-\$2M

POC telephone: Mr. Joe Brooks

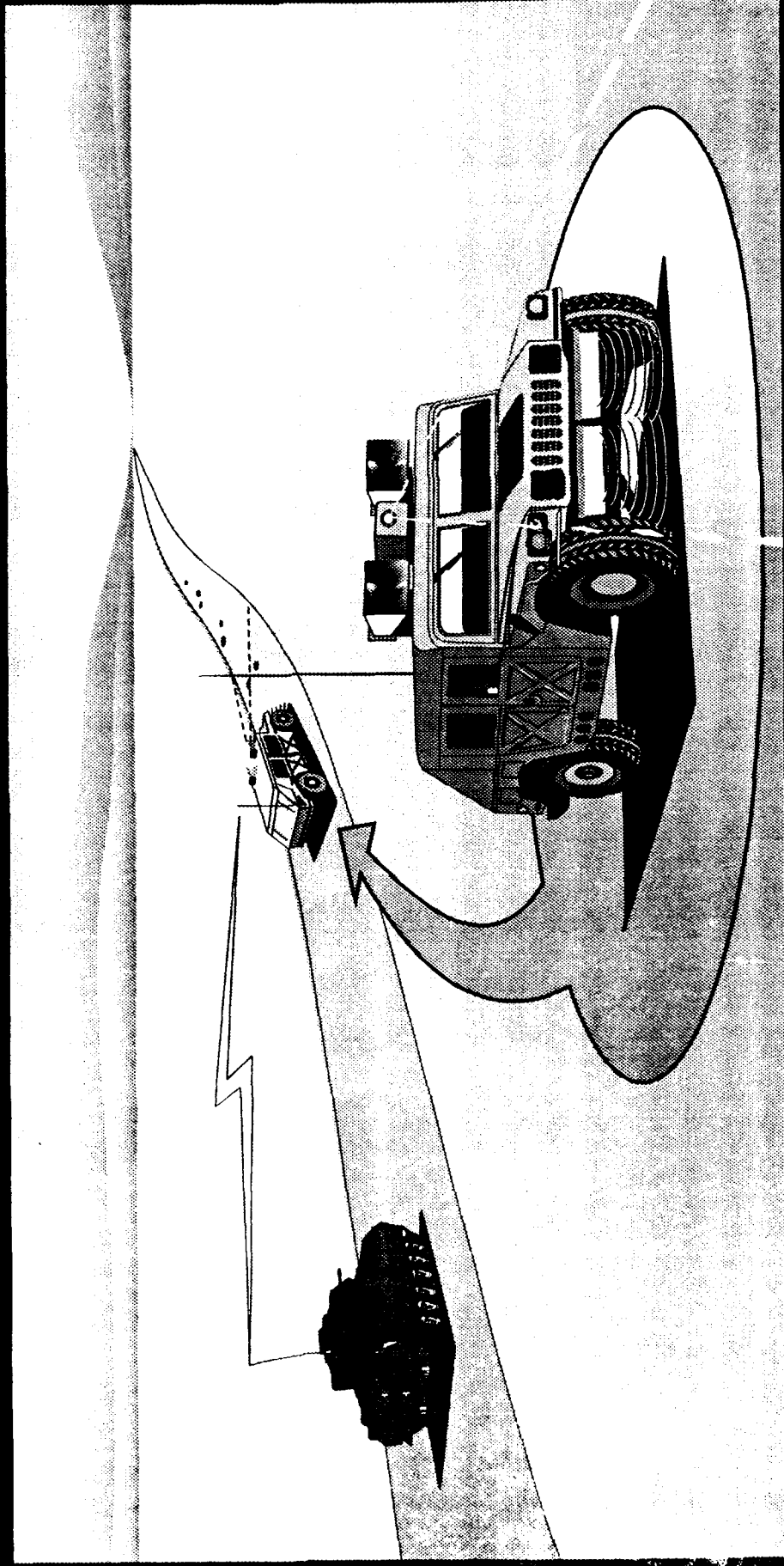
703-704-1251

All contract actions are dependent upon receipt of FY95 funds.

Night Vision and Electronic Sensors Directorate

"A New Way of Doing Business" Government and Industry Team

Countermine Detection Sensor Surrogate



PS0808 04 15 94 021



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Contract Opportunity

Title: Countermine Detection Sensor Surrogate

Objective: Build in-house surrogates using state of the art mine detection sensors to gain technical expertise and knowledge to compliment the Vehicle mounted Mine Detector ATD. The data acquired with these sensors will also be used to develop mine detection algorithms and multi-sensor fusion techniques.

Proposed contract type: TBD

Key milestones: Contract award: 1QFY96

Contract length: 24 months

Estimated value: \$3M-\$4M

POC telephone: Dr. Thomas Broach

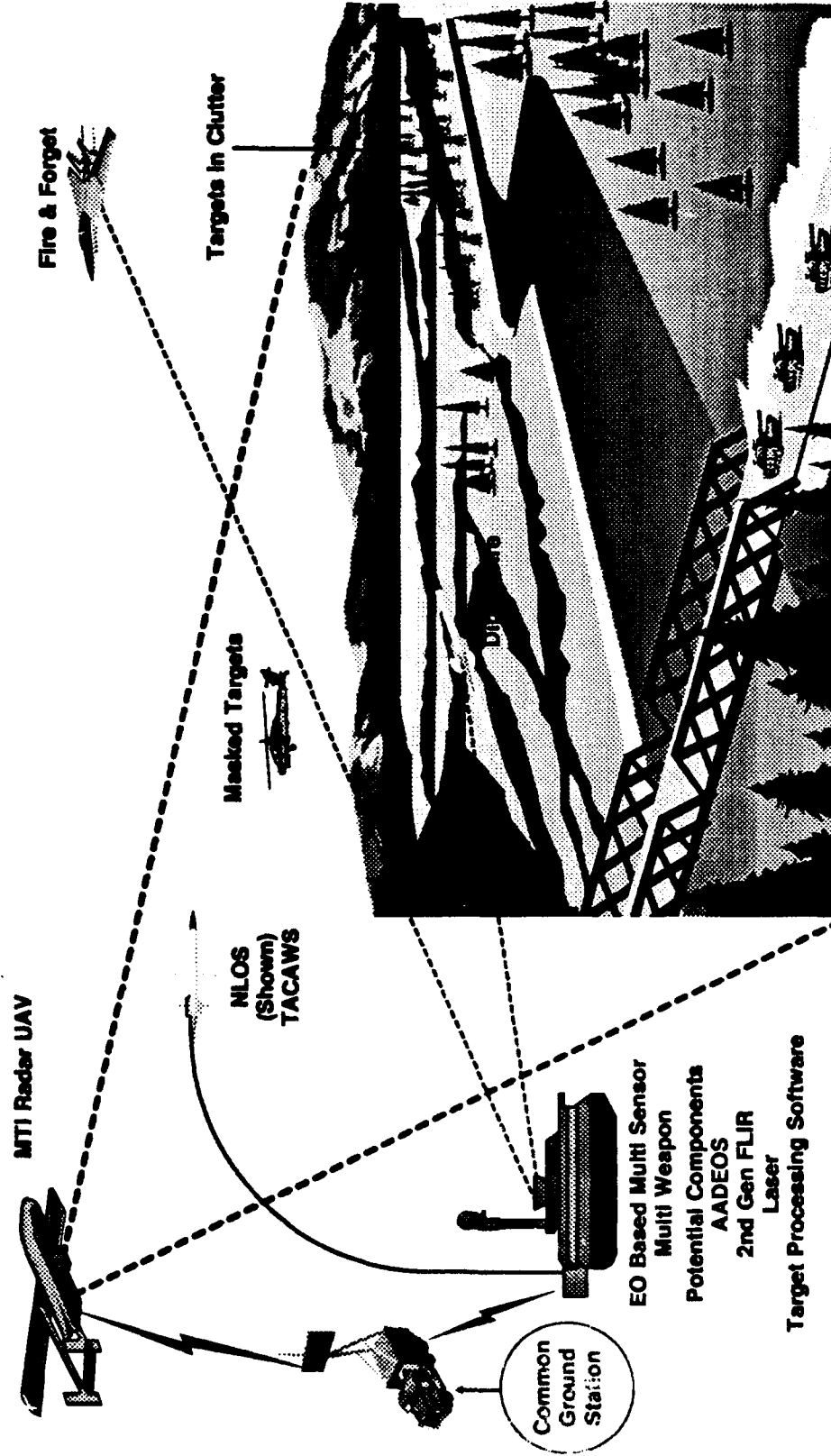
703-704-1035

All contract actions are dependent upon receipt of FY96 funds.

Night Vision and Electronic Sensors Directorate

"A New Way of Doing Business" Government and Industry Team

Masked Target Kill Sensor Surrogate



DOEP&L



CECOM RDEC

Night Vision and Electronic Sensors Directorate



APBI "CECOM Sensor Advanced Technology Demonstrations"

CONTRACT OPPORTUNITY

Title: Masked Target Kill Sensor Surrogate

Objective: Conduct risk reduction experiments and mini demonstrations that allow functional proof of principle of the MTK concept, through the use of surrogates, brassboards, and hot mockups.

Proposed contract type: TBD

Key Milestones:

Contract Awards: FY97

Contract Length: 24 months

Estimated value:

\$2 M - \$3 M

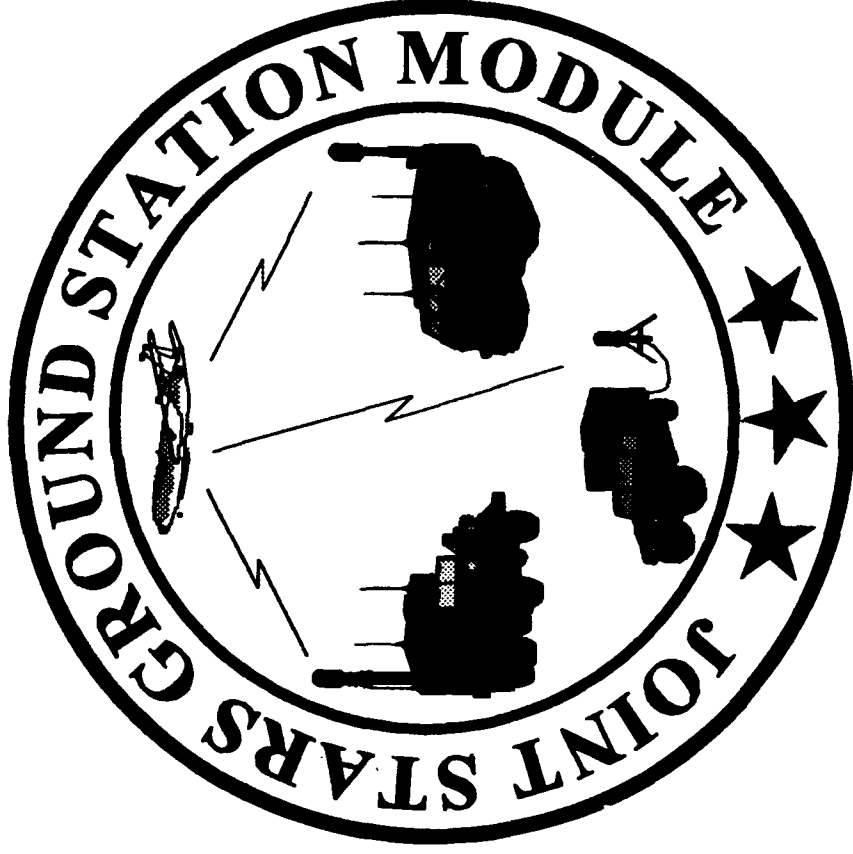
POC/telephone:

Mr. Franklin Doepele

703-704-1216

All contract actions are dependent upon receipt of FY97 funds.

NOTES



COL James L. Mitchell
Project Manager - Joint STARS
PEO-I EW

UNCLASSIFIED

SFAE-IEW-JS

11 May 1994

POINT PAPER

SUBJECT: Joint STARS Ground Station Module/Common Ground Station

OBJECTIVE: To provide production models of the Joint STARS Common Ground Station.

FACTS:

- **Type of Contracts:** Competitive
Fixed Price
- **Schedule:** FY96
- **Efforts will involve tasks relating to Production models of Common Ground Station. Follow-up Pre-Planned Product Improvement initiatives to be determined.**

BRIEFER: COL James L. Mitchell, Army Project Manager, Joint STARS, SFAE-IEW-JS,
908-544-5165.

ACTION OFFICER
Perry J. Gnos
PM Joint STARS
908-544-4971

Joint STARS

Ground Station Module / Common Ground Station

Description

The Ground Station Module (GSM) / Common Ground Station (CGS) is an element of The Joint Army/Air Force **Surveillance Target Attack Radar System**. Using common subsystems in different carriers (5 ton truck, Command and Control Vehicle and High Mobility Multi-purpose Wheeled Vehicle), the system disseminates intelligence and targeting data in near real-time to Army Command, Control, Communications and Intelligence Nodes via wire or radio.

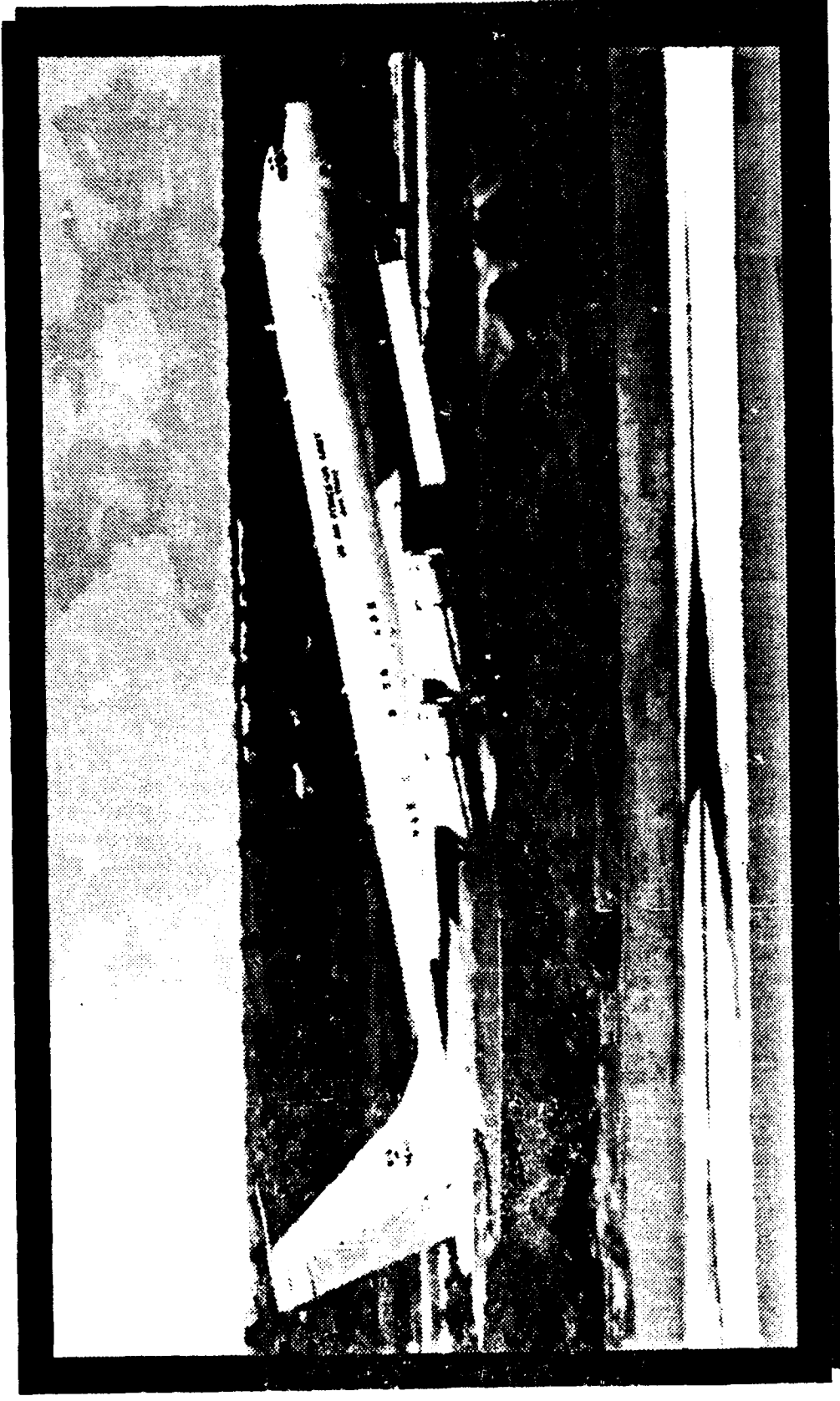
Ground Station Modules and Common Ground Stations will support situation development, targeting and battle management functions at all fielded echelons.

Joint STARS

Ground Station Module



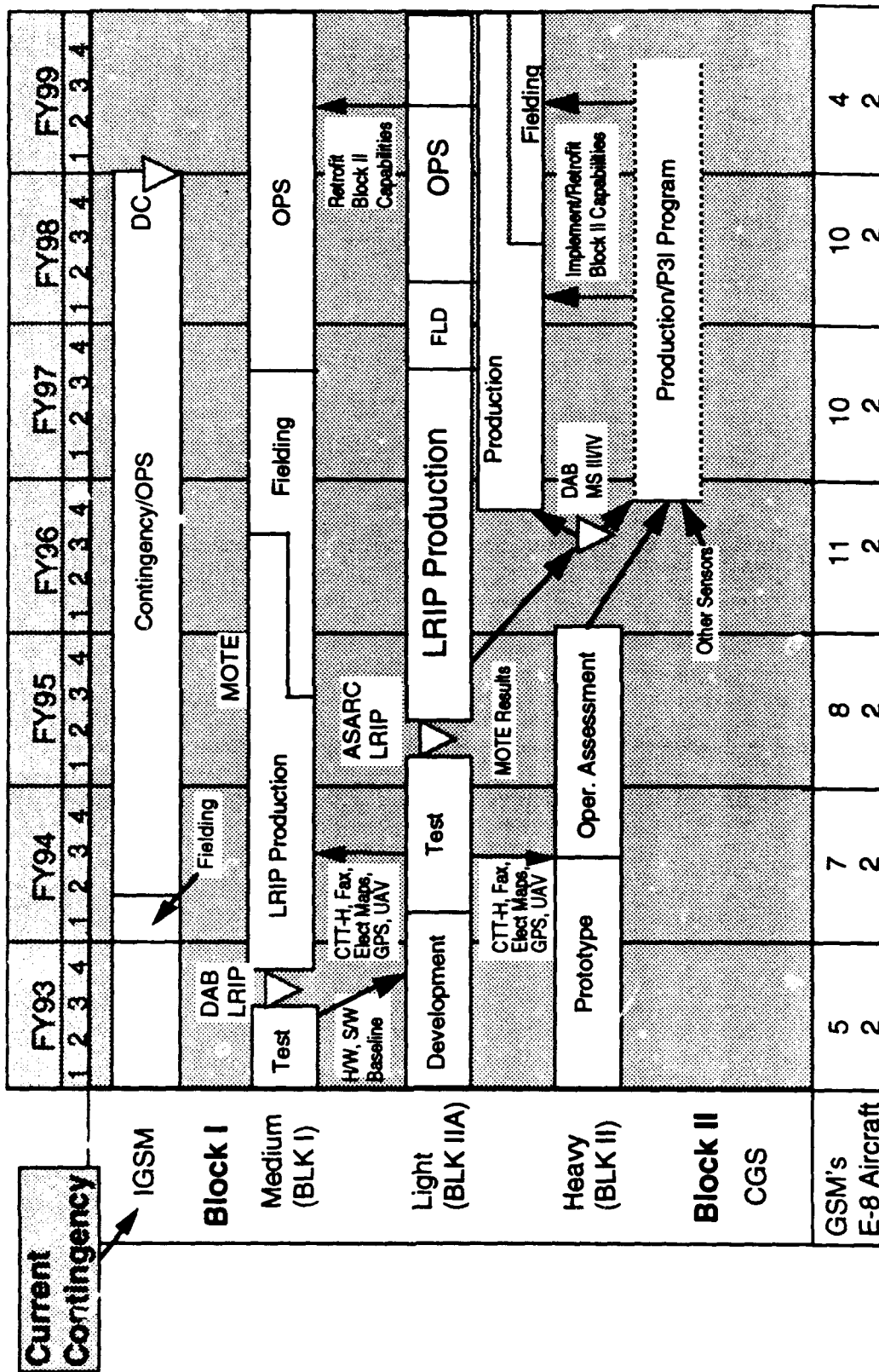
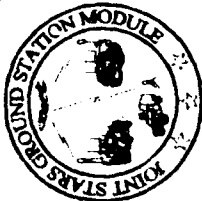
Joint STARS E-8 Aircraft



IEW

PROGRAM EXECUTIVE OFFICE

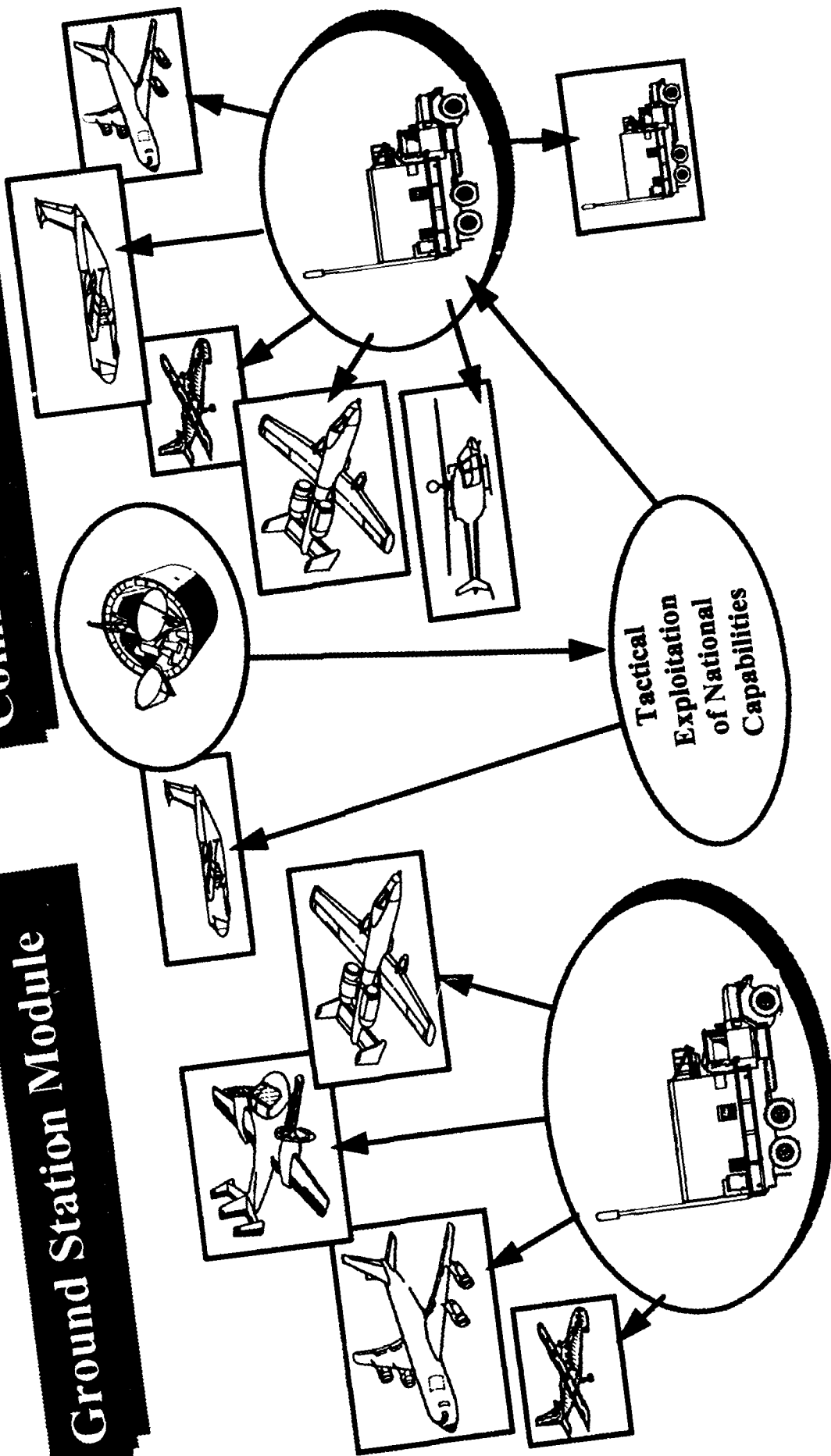
Joint STARS Ground Station Module Current Acquisition Strategy



*40 CGS to Complete

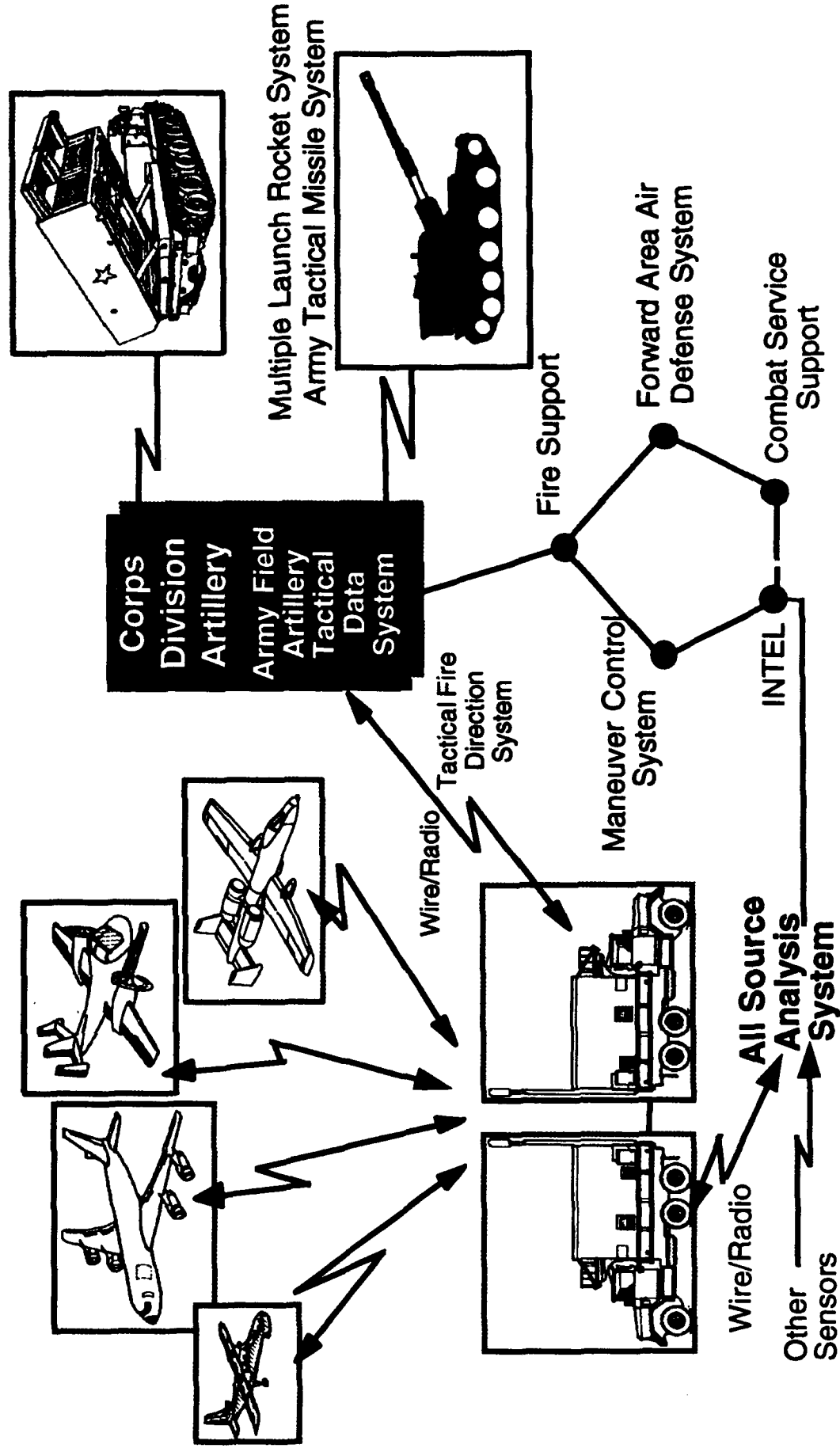
Joint STARS

Ground Station Module / Common Ground Station



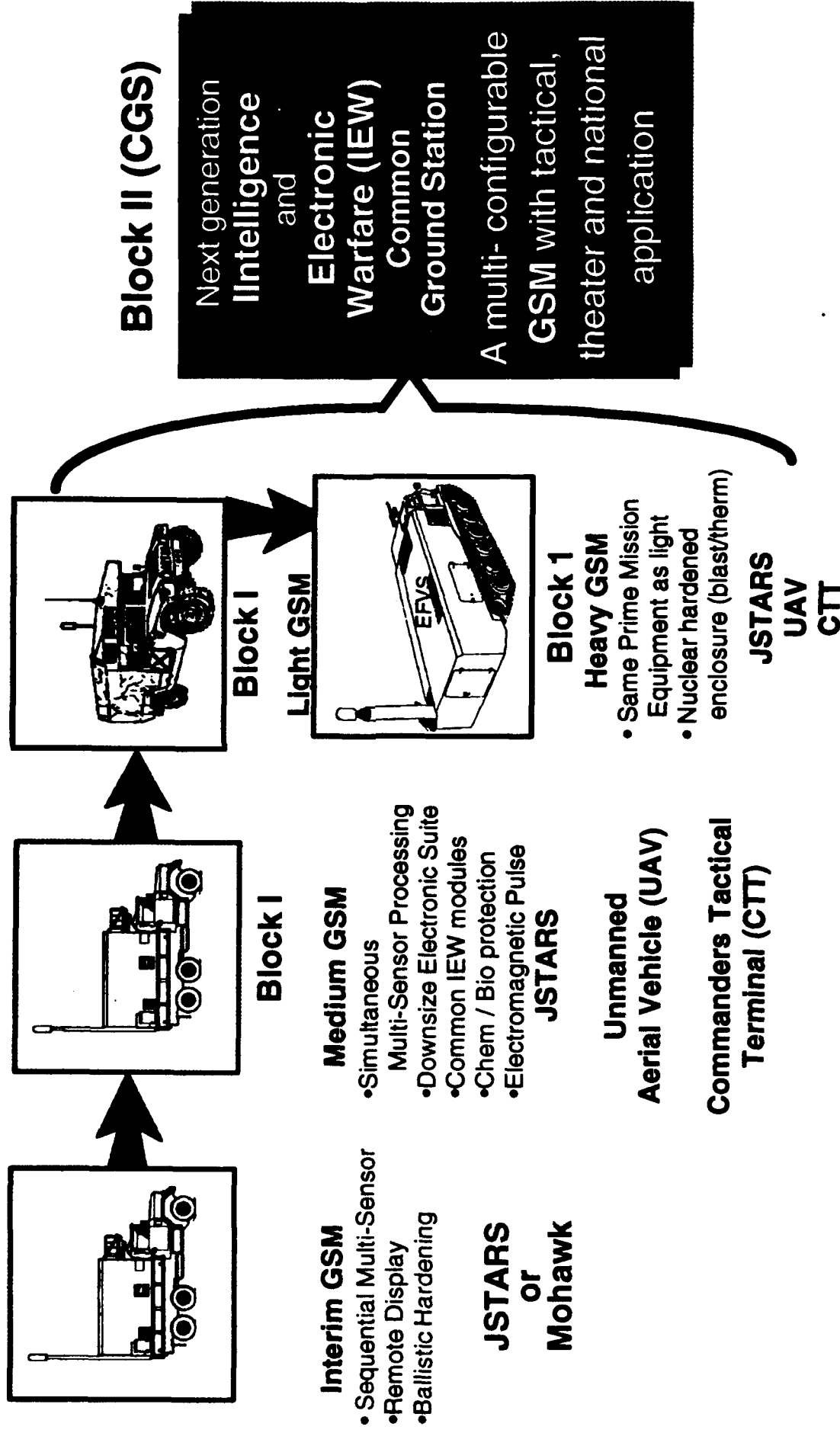
Joint STARS Ground Station Module / Common Ground Station

Status: Operational Capabilities



Joint STARS Ground Station Module / Common Ground Station

Status: Existing / Evolving Technologies



Joint STARS Ground Station Module / Common Ground Station

Objectives

- Receive, process, analyze, and disseminate JSTARS radar data
- Receive, process, analyze, and disseminate additional sensor data
- Configured to support joint forces at tactical & operational echelons

Joint STARS

Ground Station Module / Common Ground Station

Payoffs

- Commander has near real-time battlefield information
 - Situation development
 - Targeting and battle management functions
 - Project and Sustain the Force
 - Protect the Forces
 - Win the Battlefield Information War
 - Conduct Precision Strikes
 - Dominate Maneuver

Joint STARS Ground Station Module / Common Ground Station

Milestones

FY-95:

- Electronic bulletin board up and operational
- Release Ground Station Module drawings and software to industry
- Release draft Request for Proposal to industry via electronic bulletin board

Joint STARS Ground Station Module / Common Ground Station

Milestones

FY-96:

- Conduct Milestone III / IV Defense Acquisition Board
- Award competitive contract for:

Light Common Ground Station (CGS) 45 each
and option for
Heavy Common Ground Station (CGS) 28 each

Joint STARS

Ground Station Module / Common Ground Station

Funding Profile

	RDTE \$M	PROC \$M	OMA \$M
FY 95	25-35	60-70	1-5
FY 96	5-15	70-80	1-5
FY 97	5-15	80-90	1-5
FY 98	5-15	80-90	1-10
ETC.	25-180	300-500	1-40
Total	65-260	590-830	5-65

CGS Potential Acquisition Streamlining Initiatives

- The Joint STARS CGS has been nominated as an Army Lead Program for Acquisition Streamlining Reform.
- Initial PM Joint STARS proposed Streamlining initiatives dated 23 Mar 94 are attached.
- Latest CGS Point Paper provided to HQDA on 15 April 94 is attached (supersedes 23 Mar 94 package)
- Final designation as an Army lead program for Acquisition Streamlining Reform and Final Streamlining Initiatives are TBD.

Joint STARS Ground Station Module / Common Ground Station

Contract Opportunity

Title:

Joint STARS Common Ground Station (CGS)

Objective:

Procure 73 (Light & Heavy) production models of CGS. Follow up Pre-Planned Product Improvement initiatives to be determined

Proposed Contract Type:

Competitive Fixed Price

Key Milestones:

Contract Award 2Q FY96

Estimated Value:

\$400 - 500 M

POC Telephone:

**Arnold Rappaport
(908)531-5386**

PM Joint STARS Answers to CGS Inquiries

NOTE: The following questions have been received from Industry. The Government has provided answers to the best of its ability at the present time. Prospective bidders are cautioned that changes are possible due to changes in budgets, user requirements, priorities and other changes.

- 1. What studies/initiatives are recently completed or currently underway in the Government to control the proliferation of similar ground station systems?**

Answer: The Defense Acquisition Executive, The Army Acquisition Executive and the Program Executive Officer for IEW have determined that PM Joint STARS has the responsibility for the development and production of the Common Ground Station (CGS). The CGS will not be the only sheltered system containing computerized hardware.

- 2. How will information be transmitted to and from the CGS? In what form and with what precision or level of resolution?**

Answer: Information will be transmitted to and from the CGS among the designated sensors and subscribed systems with which the CGS has been tasked to operate. The form and precision will be within the capabilities of these systems. Joint STARS ground station design presently includes a Surveillance and Control Data Link (SCDL), UHF SATCOM and the Commander's Tactical Terminal (CTT). CGS will evolve from that configuration. CECOM Advanced Technology Demonstration (ATD) program is exploring alternate SATCOM and wireless LAN/PACKET Radio approaches to support high data rates. If feasible these ATD initiatives will be included.

- 3. How will the CGS be linked horizontally and vertically on the battlefield?**

Answer: The CGS will be linked via ATCCS, MSE and SINCGARS. ATD initiatives (as discussed in paragraph 2 above) as appropriate, may be included.

- 4. How does the CGS function within the Army's concept of operations of a digitized battlefield?**

Answer: The CGS is a major system on which the concept of operations of a digitized battlefield is based.

- 5. Will the VME standard hardware architecture be required in the CGS or is the hardware architecture open for selection by the contractor?**

Answer: VME hardware is desired. COTS packages may be implemented.

- 6. Will the VMS standard software be required in the CGS or is the software architecture open for selection by the contractor?**

Answer: There are currently no plans to require VMS.

- 7. Is the government willing to allow other than Ada software in the CGS procurement? Ada 9X? Will source selection criteria penalize contractors not using Ada?**

Answer: A mix of Ada and NDI/COTS software will be used to provide a cost effective software solution to CGS requirements.

- 8. What is the TRADOC Vision beyond the Common Ground Station?**

Answer: The purpose of this procurement is to address the CGS.

- 9. What impact will joint operations have on the CGS requirement? Conversely, what impact will CGS have on joint operations?**

Answer: CGS is meant to serve as a key Army ground component in the battlefield of the future. It will offer advantages and usefulness to other services also.

- 10. Will the planned CGS hardware architecture be required to adequately support the future growth requirements, to handle future process requirements (speed and memory) in support of future sensors and/or secondary dissemination systems?**

Answer: CGS must be planned to accomplish the present suite of capabilities and must be flexible enough to allow the integration of future technology.

- 11. Does the TRADOC community perceive a problem in fielding Joint STARS Ground Stations and E-8 workstations that are not functionally equivalent, particularly in view of Army operator using both types of workstations?**

Answer: No, TRADOC addressed this issue last year and did not find a problem in this area.

- 12. Does the Army plan to have an ATD or battle lab demonstration for modules of the Common Ground Station?**

Answer: Yes

- 13. What is the relationship and linkage of participation in the CGS ATD to the acceptability of competitors for the CGS production contract?**

Answer: Participation in the CGS ATD is not a prerequisite for being accepted for the CGS production contract.

- 14. What is the likelihood of an Army CGS system vis-à-vis a tri-service wide area network?**

Answer: CGS is being developed to answer a known Army need.

- 15. Will the CGS acquisition be built to print of LGSM, or based on a functional specification; i.e. a whole new development?**

Answer: See questions #18 and 23, below.

- 16. Will P31 of the LGSMs be for specific CGS functional requirements as directed by TRADOC?**

Answer: Yes

- 17. Has TRADOC refined the P31 list to fit the budget?**

Answer: The CGS procurement will concentrate on the CGS' ability to receive, process and disseminate JSTARS, CTT, UAV and Secondary Imagery Dissemination (SID) via CTT 3 channel. These capabilities are within the budget.

18. Because Motorola designed and Built the JSTARS Ground Station Module (GSM) Block I, would they have a commanding competitive advantage over any other contractor? How will the Government make it fair for any other contractor to compete?

Answer: The Government believes that a fair competition is feasible. All contractors will be given access to Government owned GSM documentation in "as is" condition. Contractors will have the option of "mixing-and-matching" current GSM designs with their own innovations and NDI/COTS solutions to the CGS functional requirements.

19. What are the differences between a JSTARS GSM and CGS?

Answer: Functionally, the CGS will include current GSM capabilities as well as additional capabilities. These additional capabilities will initially include Secondary Imagery Dissemination (SID) and will eventually include other interfaces and capabilities as defined by the user community.

20. Since the Army is moving toward the Digitized Battlefield:

a) Is there a published operational concept for the digitized battlefield? Is it available to contractors?

Answer: The concept of the digitized battlefield is an ongoing effort within DoD and is beyond the scope of this CGS procurement.

b) Has the operational role of the CGS in the digitized battlefield been described in writing yet? Is such a description available to contractors? Does the CGS include or directly support targeting?

Answer: The CGS is an element of the digitized battlefield. However, a discussion of the digitized battlefield is beyond the scope of this procurement. The CGS will support targeting directly through its TACFIRE/AFATDS interface.

c) What specific communications, processing and mobility capabilities should the CGS have to be part of the digitized battlefield.

Answer: CGS communications and processing must support interfaces with the Joint STARS E-8 aircraft, the UAV Ground Control Station (GCS), SATCOM, TROJAN, the Commanders Tactical Terminal (CTT), ASAS, TACFIRE/AFATDS, Secondary Imagery Dissemination (SIDs) and voice communications, as well as associated graphical user interface (GUI) and data base management functions. P3I will include additional sensor and C3I interfaces. The initial CGS variant will be housed in a SICPs shelter mounted on a Heavy HMMWV. P3I includes a Heavy CGS variant housed in a C2V shelter mounted on a Bradley chassis.

d) Which of these capabilities are likely to be required in the initial CGS and which can be expected as part of an evolutionary P3I approach?

Answer: See preceding answer.

21. If operations while mobile are a requirement, are they:

a) With full or degraded capabilities?

Answer: Full capabilities are not required on-the-move. Primary requirement will be receipt of Joint STARS data via SATCOM on-the-move.

b) With full or limited communications (conformal antennas)?

Answer: See preceding answer.

c) With assistance to the crew to prevent motion sickness and allow system interoperability in a noisy and bouncy environment?

Answer: "On-the-move" is an existing GSM capability. Each prospective contractor will be responsible for insuring that the CGS is operable in its intended environment, including noise and vibration associated with vehicle operation.

22. Which sensor inputs besides JSTARS does the Army want in the initial CGS?

a) Are these direct inputs or relayed and processed data from sensor ground stations?

Answer: See 20.c, above.

b) How much automated fusion of information from these sensors is wanted?

Answer: "Fusion" is not required. However, the CGS must provide a man-machine interface (MMI) and appropriate tools to allow the operator to process and correlate the CGS sensor inputs and to provide CGS output products in a timely manner.

c) How much assistance to operators is wanted; for example are automated, integrated map displays desired? required? Are automatically generated messages desired? required? Is artificial intelligence software that can recognize developing situations desired? required?

Answer: See previous answer. Digitized map displays, with integrated sensor information where appropriate, is required. Operator aids to automatically or semi-automatically generate messages are required. "Artificial intelligence" is not required. However, any tools to assist the operator in performing his mission are desirable. Tools for tracking targets, predicting target time-of-arrival at selected points, etc. are required.

23. Will the CGS be a development program or will NDI/COTS be emphasized? What will the CGS program be in terms of time span and number of units? What is the latest program schedule? When is an RFP, proposal and award planned? Is there a change in program funding (if so, up or down and how much)?

Answer: The CGS will consist of a production component based upon a performance specification, as well as a P3I effort. NDI/COTS will be emphasized. Quantities, schedules and budgets will be addressed to the extent that information is known during the APBI briefing.

24. Is there a relationship between the C2V Program and the CGS Program? Will one grow into the other? Will they be planned to operate together?

Answer: The Heavy CGS plans on using the C2V shelter. Both the C2V and Heavy CGS will be mounted on the Bradley chassis.

25. Is a demonstration likely to be required as part of a proposal?

Answer: No final decision has been made regarding a demonstration. If a decision is made to require a demonstration, industry will be notified of this decision as soon as possible.

26. Will there be another briefing to industry this year?

Answer: The 11-12 May 1994 APBI is currently the only briefing planned for the remainder of FY-94. However, draft specifications and draft RFPs will be released for industry comments as they become available and a pre-solicitation conference is currently planned in conjunction with the formal RFP release. The most current schedule information will be briefed at the APBI.

UNCLASSIFIED

POINT PAPER

SUBJECT: Joint Surveillance and Target Attack Radar System (JSTARS) Common Ground Station (CGS)

PURPOSE: State the acquisition streamlining and reform objectives of the JSTARS CGS.

FACTS:

o **Description:** The CGS is an evolution of the current JSTARS Ground Station Module (GSM). It is an integral part of the Digitized Battlefield, linking and correlating diverse, multi-service sensors with Army systems and command, control, communications and interoperability nodes. The CGS uses an open architecture design to add more interfaces and keep pace with evolving commercial technologies.

o **Acquisition Strategy:** The JSTARS GSM/CGS is an evolutionary development program. In Nov 1993 the USD(A) approved an accelerated acquisition strategy for the Common Ground Station which included a combined Milestone III/IV in FY96. A competitive contract will be awarded in FY96 for full scale production of the CGS. Included in this contract will be a series of P3I efforts which will be funded by both RDT&E and Procurement appropriations. The production portion of the contract will be fixed price. P3I portions of the contract may be fixed price or cost type efforts. Funding ranges between \$85-120M annually from FY94-99 for all appropriations.

o **Acquisition Process Improvement Objectives:**

oo **Open Architecture:** An open architecture employing commercial specifications, standards, practices and technologies will be used to implement the CGS.

oo **Coordinated Hardware and Software Development and Production:** Software will be matured and refined in parallel with hardware production to attain fielding of modern hardware with functional, operationally suitable software.

oo **Reliability, Maintainability and Availability:** System availability will be a primary system objective. It will be addressed from a process

improvement perspective wherein hardware, software and operations will be continuously improved.

oo **Software Requirements:** A mix of Ada and NDI/COTS software will be used to provide a cost effective software solution to CGS requirements. Software documentation requirements will be tailored to those necessary for life cycle support and reprourement.

oo **Best Value:** Source selection for the CGS will use the best value concept.

oo **Performance-Based Requests for Proposals (RFPs):** RFPs will be based on performance requirements. An example statement of work (SOW) and or specification will be used to allow contractors to tailor the work effort to their unique capabilities. Draft specifications and RFPs will be released for industry comment prior to formal RFP release.

oo **Proposal Complexity:** Page count of proposals will be limited. Evaluation will focus on key discriminators among proposals and encourage concise proposal descriptions.

oo **Price Analysis:** Price analysis shall be used in lieu of cost analysis wherever practical. Adequate price competition shall be used to establish price reasonableness.

oo **Integrated Product Development Teams (IPDTs):** Government and contractor team members will be part of the IPDT. An appropriate partnering approach will be developed. IPDTs will also be used to involve the user in development of man-machine interfaces and in evaluating development test results.

oo **Unified Testing:** Testing will not be duplicated. Requirements will be demonstrated through integration of DT, OT, simulation and analysis and contractor or Government tests. Participation in operational demonstrations and/or maneuvers may be used in lieu of formal operational tests when deemed appropriate.

oo **Production and Logistics Support:** Production shall emphasize process control over test and inspection. The PM shall make an up front evaluation of life cycle contractor support including a lifetime contractor commitment to post-delivery system availability. Trade-offs among reliability, maintainability and availability requirements, spares quantities, production test requirements, contractor process controls, drawing requirements, warranty

provisions, value engineering and configuration management will be pursued and approved by the PM to provide a cost effective production and logistics support program.

o **Government Oversight Objectives:**

oo **Delegation of Milestone Decision Authority:**
The PEO IEW will be the Milestone Decision Authority (MDA) for the JSTARS/CTT product lines.

oo **Delegation of Source Selection Authority:**
Delegate approval authority for multi-year procurement and SSA to the HCA.

oo **OSD and DA Oversight:** The PM will provide program status to DA and OSD via the DAES. Additional requests for status, briefings or metrics data shall be at the written direction of the AAE, USD(A) or higher authority. OSD Review of RFPs and Contracts shall not be required. The PEO/PM will negotiate with the AAE/Military Deputy and Conventional Systems Committee chairs to establish the minimum documentation to support the decision. The PEO will publish an ADM after the milestone review.

oo **Streamlined Support Documentation:** Program support documentation will be streamlined to convey essential information in a concise manner.

oo **Joint Program Implications:** Flow down of requirements through the joint program office will not be used to impact the intent of streamlining initiatives.

oo **Related Programs:** The PM and PEO will have the same authority and responsibility for streamlining the related Ground Station Module and Commander's Tactical Terminal Programs as are granted for the CGS. PM JSTARS will have sole development authority for this class of equipment.

o **Regulatory Relief Requested:**

oo **Delegation of MDA.** DOD 5000.2, Part 2, B.2.b.(1)(a) requires that the Under Secretary of Defense for Acquisition act as the Milestone Decision Authority (MDA) for ACAT 1D programs. A waiver is requested to delegate this authority to PEO IEW. Further, waivers to DOD 5000.2, Part 13, Section A, 3.a. requirement for the DAB to meet at each milestone and DOD 5000.2 Part 13, Section C, 3.a CAIG requirements are also sought.

oo **Multi-year and SSA Delegation.** Waiver of DFAR 217.103-1(b)(iv), (v), and (vi) and Army FAR

Supplement 17.103 and Appendix AA-200(a) are requested to delegate multi-year contracting authority and Source Selection Authority (SSA) authority to HCA.

oo **RFP and Contract Review.** DOD 5000.2, Part 2, C.2.f. requires RFP and contract reviews by the MDA prior to release or execution. Similar requirements are contained in USD Memorandum dated April 11, 1991. Request waiver of both of these requirements. Final review and approval of RFPs, contracts and long lead approval authority will be a joint PEO IEW & HCA responsibility. Draft specifications and RFPs will be provided to OSD for comment concurrent with release of these draft documents for comments from industry.

oo **MIL Standards.** NDI, COTS and commercial specifications, standards and practices will be used. Regulations, MILSPECS, and directives including those called out in DOD 5000.2, Part 6, Section A, 3.c.(1) will be applied on an exception basis as determined by PEO IEW.

oo **Reliability, Maintainability and Availability.** DOD 5000.2, Part 6, Section C requires the MDA to use reliability and maintainability considerations at milestone decision points. Reliability and maintainability objectives for hardware and software will be established to support the overall availability objectives. A waiver to DOD 5000.2, Part 6, Section C is therefore requested.

oo **Software Requirements:** Public Law 101-511 mandates Ada where cost effective and unless exempted by an official designated by the Secretary of Defense. DOD Instruction 5000.2, DOD Directive 3405.1 and HQDA Letter 25-92-1 all require the use of Ada. DOD policy letter SAIS-ADO dated 16 July 90 specifies a maximum of 15% non-Ada lines of code or 10K lines of machine code. These policies are overly restrictive in an NDI/COTS environment. The Project Manager (PM) is therefore granted waiver authority to determine the overall system limits on non-Ada software.

oo **Design to Cost.** Waiver from requirements of DOD 5000.2, Part 6, Section K, Design to Cost, is requested. Cost control will rely on process improvements, for example the use of NDI items, use of commercial specifications, etc.

oo **Production Readiness Reviews.** Since Production contracts are intended to be based on Performance Specifications and rely heavily on NDI, the conduct of Production Readiness Reviews is not appropriate. Waiver of DOD 5000.2, Part 6, Section O is

therefore requested. The MDA shall be responsible for insuring adequate preparation for Production.

oo **Parts Control.** Commercial parts and processes will be used to the maximum practical extent. Waiver from DOD 5000.2, Part 6, Section R is therefore requested.

oo **Test and Evaluation.** Software will be matured and refined in parallel with hardware production. Thus, all formal software testing will not be completed prior to a production decision. Relief is therefore requested from DOD 5000.2, Part 8, 3.d. and Part 8, 4.a.(3). Further, it is the program intent to use results from demonstrations and exercises to supplement formal testing and analyses. Relief is therefore requested from DOD 5000.2 Part 8, 5.a.(1) to delegate TEMP approval to DUSA(OR) to implement this unified test approach.

oo **C/SCSC System Reviews.** Cost reporting will be consistent with existing commercial business practices and it is requested that Cost Schedule Control System (CSCS) requirements be waived at the discretion of the PEO. The need to validate specific contractor C/SCSC systems will be determined by the MDA. Relief from DOD 5000.2, Part 11, Section B, 3.d, e and f is therefore requested.

oo **Streamlined Program Documentation.** Only essential documentation will be provided and all documentation will be provided in as concise form as possible. Waiver of DOD 5000.2 Part 11, Section C, 2.b.(2), Section D, 2.c, and Section E, 2.c. are therefore requested. Furthermore, format and content of all documentation required by DOD 5000 series will be tailored to include only essential information in as concise a format to support the intent and use of the particular document.

oo **Army Regulations.** The MDA will have the authority to waive any acquisition procedures required by Army regulations and not required by statute or Federal Acquisition Regulations.

oo **Contract Documentation:** The PEO shall have the final authority to include or exclude specific contract data items (CDRLs), including drawings, technical manuals, plans, procedures, etc. Contractor format documentation shall be used to the maximum extent practical. Maximum use will be made of electronic access to contractor documentation to reduce delivery of hard copy documentation.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
RESEARCH DEVELOPMENT AND ACQUISITION
100 ARMY PENTAGON
WASHINGTON DC 20310-0100

March 23, 1994



MEMORANDUM FOR PROGRAM MANAGER, ADVANCED FIELD ARTILLERY
SYSTEM/FUTURE ARMORED RESUPPLY VEHICLE
PROGRAM MANAGER, JOINT SURVEILLANCE TARGET
ATTACK RADAR SYSTEM/COMMANDER'S
TACTICAL TERMINAL
PROGRAM MANAGER, PAC-3 MISSILE

SUBJECT: Army Load Programs for Acquisition Streamlining/Reform

The attached package was presented to the Under Secretary of the Army on March 23, 1994. The original requirement was March 21, 1994, but was changed by the Under Secretary. The schedule for a final package, ready to be sent to the Deputy Secretary of Defense, was originally due on March 28, 1994. We have asked for an extension to April 11, 1994. Chances of approval are excellent, but if for some reason it is not, I will call you direct.

Please review the point paper pertaining to your program. Add comments that you feel should be included. Under the paragraph titled, Statutory/Regulatory Relief, you must identify the specific regulation, to include chapter and paragraph for which you request a waiver. Consider suggesting alternative methods/times of providing information that you would consider reasonable if you were in the management oversight position. Do not include requests for waivers that only Congress may grant, since proposed legislation addressing many of your concerns is pending before Congress and will be acted upon NLT July 1994.

Once you have accomplished the above tasks, please re-type the Point Paper and FAX to the number listed in the first paragraph of LTG Forster's letter to the PEOs by COB April 4, 1994.

Carefully consider what you ask for, it may very well be granted. If you have any questions, please call me at (703)-695-6153/54.

DANNY L. ABBOTT
Colonel, GS
Director, Acquisition Policy
Reform Working Group

Attachment

INDEX

- TAB A LETTER TO PROGRAM EXECUTIVES**
- TAB B PROPOSED DRAFT LETTER TO DEPUTY SECRETARY
 OF DEFENSE**
- TAB C POINT PAPER, JOINT SURVEILLANCE AND TARGET
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- TAB D POINT PAPER, ADVANCED FIELD ARTILLERY SYSTEM/
 FUTURE ARMORED RESUPPLY VEHICLE (AFAS/FARV)**
- TAB E POINT PAPER, PATRIOT ADVANCED CAPABILITY-3
 MISSILE**



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
RESEARCH DEVELOPMENT AND ACQUISITION
103 ARMY PENTAGON
WASHINGTON DC 20310-0103



REPLY TO
ATTENTION OF

March 16, 1994

MEMORANDUM FOR PROGRAM EXECUTIVE OFFICER, CRUISE
MISSILES AND UNMANNED AERIAL VEHICLES
PROGRAM EXECUTIVE OFFICER, FIELD
ARTILLERY SYSTEMS
PROGRAM EXECUTIVE OFFICER, INTELLIGENCE
AND ELECTRONIC WARFARE
PROGRAM EXECUTIVE OFFICER, MISSILE
DEFENSE

SUBJECT: Army Lead Programs for Acquisition
Streamlining Reform

The Under Secretary of the Army has requested four programs be selected for possible "Army Lead Program" to aggressively apply acquisition streamlining initiatives. He has requested a point paper, due March 21, 1994, outlining what we will do, OSD support desired and what benefits we will achieve. Point papers should be submitted by Program Managers by COB March 17, 1994, to MG Prather, fax 703/617-7376.

Programs selected are: Advanced Field Artillery System/Future Armored Resupply Vehicle (AFAS/FARV), PAC-3 Missile, Joint Surveillance Target Attack Radar System/Ground Station Module/Commander's Tactical Terminal, and Joint Tactical Unmanned Aerial Vehicle (Maneuver Variant).

"Army Lead Programs" are intended to reap the benefits of innovative approaches to acquisition in the near term. Examples of high payoff approaches include:


- a. use of commercial business and manufacturing practices vs. government dictated practices;
- b. reduced regulatory requirements and government oversight;
- c. significant use of modeling and simulation throughout the process;
- d. use of integrated product development teams in government and industry;

- e. performance based RFP vs. "how to" RFP to eliminate low-value requirements;
- f. use of commercial specifications and standards vs. military unique;
- g. use of dual-use technology;
- h. use of non-developmental items (NDI);
- i. use of government/industry teaming/partnering;
- j. use of best value in source selection; and
- k. use of risk management vs. risk avoidance management approach.

Participating programs should:

- a. identify regulatory waivers required, and what benefits will accrue to their programs if granted;
- b. identify the innovative approaches/practices they will use, the benefits they will realize from their use, and how these benefits will be used to improve acquisition efficiency (including the financing of budget shortfalls); and
- c. summarize acquisition strategy, schedule, and funding.

Your inputs will be used by a joint SARDA/AMC staff cell to prepare and staff a proposal by March 28, 1994, for the Under Secretary of the Army.


WILLIAM H. FORSTER
Lieutenant General, GS
Military Deputy to the
Assistant Secretary of the
Army (Research, Development
and Acquisition)

MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE

SUBJECT: Army Lead Programs for Acquisition Streamlining and Reform

1. Our Army is working hard to improve its capability to fight and win our Nation's wars. We are introducing new doctrine, evolving our combat training centers, modernizing our equipment, and changing the way we do business. Dramatic reductions in our investment accounts over the past several years, a shake-out in the Nation's defense industrial base, and increased requirements for a force projection Army pose significant challenges for the future.
2. A force projection Army must rapidly infuse into the warfighting force those technologies that give it a lethal edge and sustainment capability over potential adversaries. Maintaining this warfighting advantage requires an agile defense acquisition system that gets more for every dollar invested. Acquisition streamlining and reform, across a broad front, provides the means to leverage scarce resources.
3. We are gaining momentum in our streamlining and reformation efforts. Our focus on Battle Labs, Louisiana Maneuvers, Battlefield Digitization, and Acquisition Improvement Road Shows, regulatory reduction, and commercial products and practices are changing our process for the better. We need your help to do more.
4. I will use three Army acquisition programs and one Army-led joint program to spearhead the achievement of acquisition streamlining and reform in a totally integrated fashion. Piecemeal improvements, on the margin, won't give us the acquisition agility we need. Every rule and practice will be opened up to see what value it really offers to the process. Useless overhead, both in-house and in the industrial base, will be eliminated. Then we want to use every dollar saved to reinvest in core warfighting programs.
5. I would like to propose also streamlined oversight procedures. Rather than the current rigid reviews with extensive documentation and pre-briefings, I would prefer to use event driven Initial Progress Reviews (IPRs) with minimum documentation necessary to support decisions. The "events" and the documentation requirements would be negotiated by the Army Acquisition Executive(AAE)/Military Deputy to the Assistant Secretary of the Army (RDA) with Chairs of the Conventional Systems (CSC) or Strategic Systems (SSC) Committees. Programs would go to the DAB only if the Chairs were unable to reach agreement with the AAE on how to proceed. My intent is not to reduce oversight by you or the Defense Acquisition Executive but to make oversight less onerous.
6. The objectives for these lead programs are described in the attached information papers. We will use them to achieve integrated process improvements, help educate the work force, and establish the outer limits of acquisition streamlining and reform. Your help is needed to stabilize funding for these programs and enable us to reinvest the savings from improvements.

7. With your agreement, we will work with your staff to make these programs real showcases of acquisition streamlining and reform benefits and models for future programs.

Under Secretary of the Army

Attachments

UNCLASSIFIED

POINT PAPER

SUBJECT: Joint Surveillance and Target Attack Radar System (JSTARS) Common Ground Station (CGS)

PURPOSE: State the acquisition streamlining and reform objectives of the JSTARS CGS.

FACTS:

- o **Description.** The CGS is an upgrade to current ground stations. It is an integral part of the Digitized Battlefield, linking and correlating diverse, multi-service sensors with Army systems and command, control, communications and interoperability nodes. The CGS uses an open architecture design to add more interfaces and incorporate evolving commercial technologies.

- o **Acquisition Strategy.** An evolutionary development approach is being used. Started in FY89, the Block I Engineering and Manufacturing Development was sole source to Motorola. It will be completed in FY95 with the operational test. Low rate initial production will follow if exit criteria are met. Block II will be competed. A combined OSD DAA Milestone III/IV review is scheduled for FY 96 on Block II. Funding ranges between \$85-110M annually from FY94-99.

- o **Acquisition Process Improvement Objectives:**

- oo **Performance-Based Requests for Proposals (RFPs).** RFPs will be based on performance requirements. NDI, COTS and commercial specifications, standards and practices will be used.

- oo **Software Requirements.** Ada will be the language of choice. The Project Manager (PM) may waive Ada use when it makes good business sense to use COTS/GOTS. Software documentation requirements will be tailored to those necessary for life cycle support.

- oo **Contract Documentation.** The PM may exclude specific contract data items that do not add value, such as plans, reports, procedures, and drawings. Cost reporting will be consistent with existing commercial business practices.

- oo **Unified Testing.** Testing will not be duplicated. The PEO will be the TEMP approval authority. The PM may streamline testing to demonstrate requirements through integration of DT, OT, simulation and analysis and contractor or Government tests.

oo *Logistics Support.* The PM may tailor the Integrated Logistics Support effort to a highly focused LSA/LSAR, maximum use of NDI manuals and consideration of Contractor Logistics Support.

oo *Best Value.* Source selection for the Block II will use the best value concept.

oo *Open Architecture.* An open architecture will be used to employ commercial specifications, standards, practices and technologies.

oo *Integrated Product Development Teams (IPDTs).* IPDTs will be used to involve the user in development of man-machine interfaces and in evaluating development test results.

oo *Coordinated Hardware and Software Development and Production.* Software will be matured and refined in parallel with hardware production to attain fielding of modern hardware with functional, reliable software.

o *Government Oversight Objectives:*

oo *Delegation of Milestone Decision Authority.* The PEO will have the authority to waive any acquisition procedures required by DOD series 5000 regulations and all Army regulations not also required by statute, Federal Acquisition Regulations, or the Defense Acquisition Regulation Supplement.

oo *OSD and DA Oversight.* The PM will provide program status to DA and OSD on an exception basis. Additional requests for status, briefings or metrics only at the written direction of the AAB or USD(A).

oo *Delegation of Mission Need Statement (MNS) Approval Authority.* Authority to approve future MNS updates will be delegated to the CG, USAICS.

oo *Streamlined Support Documentation.* Program Support Documentation will be streamlined to convey essential information in a concise manner. Document formats will be waived unless required for statutory or pragmatic, e.g., budgetary forms, reasons for that documentation used only within DOD.

oo *Joint Program Implications.* Flow down of requirements through the joint program office will not be used to circumvent the intent of streamlining initiatives.

oo *Related Programs.* The PM and PEO will have the same authority and responsibility for streamlining the related Ground Station Module and Commanders Tactical Programs as are granted for the C39. PM, JSTARS will have sole development authority for

this class of equipment.

o Statutory/Regulatory Relief. Waivers associated with the following statutory/regulatory requirements are granted for the CGS program:

oo The requirement for DOT&E to certify readiness for operational use to Congress prior to a decision to proceed beyond LRIP.

oo Provisions of the Small Business Act that require determinations of non-responsibility to be referred to the SBA for Certificates of Competency, and that small business subcontracting plans be negotiated prior to contract award.

oo The decision to use an undefinitized contract action, as well as the length of time and amount of expenditure allowed prior to definitization will be determined by the PM.

oo The requirement for compliance with cost accounting standards.

UNCLASSIFIED

POINT PAPER

SUBJECT: Advanced Field Artillery System/Future Armored Resupply Vehicle (AFAS/FARV)

PURPOSE: State the acquisition streamlining and reform objectives of the AFAS/FARV.

FACTS:

o **Description.** The AFAS will be a 155mm self-propelled howitzer with significantly increased capabilities in the areas of lethality, mobility and survivability. The FARV will be a self-propelled armored resupply vehicle with significantly increased capabilities in the areas of resupply, mobility and survivability.

o **Acquisition Strategy.** The AFAS and FARV will be fielded as a single "system of systems." One solicitation will be issued and a single contract awarded for the AFAS/FARV DEM/VAL effort. The contractor will be responsible for total systems integration.

o **Acquisition Process Improvement Objectives.** The AFAS/FARV DEM/VAL RFP includes the following streamlining innovations:

oo **Performance Requirements.** Using a performance-based RFP rather than a "how-to" approach.

oo **Example Statement of Work (SOW).** The use of a Government-prepared example SOW allowing the contractor to prepare the detailed contract SOW tailored to meet unique program objectives.

oo **Integrated Master Plan.** Allowing the contractor to propose event driven Integrated Master Plan rather than individual "stovepipe" functional management plans.

oo **Commercial Specifications.** Allowing the contractor maximum possible use of commercial specifications rather than unique military specs.

oo **Commercial Business Practices.** Allowing the contractor maximum use of commercial business and manufacturing practices rather than Government-dictated practices.

oo **Integrated Technical Information.** Utilizing a Contractor Integrated Technical Information System (CITIS) and electronic bulletin board to allow two-way, near real-time

exchange of contractor and Government information promoting a paperless environment and an industry-Government team that is virtually co-located.

- oo **Contract Data Requirements.** Allowing the contractor to establish contract data requirements and format and propose cost-effective alternatives to meet Government data requirements.

- oo **Integrated Product Development Teams (IPDTs).** Conducting effective concurrent engineering through the use of IPDTs between Government and industry and allowing Government/industry partnering.

- oo **Simulation.** Exploiting use of rapid and virtual prototyping, simulation and modeling in engineering design.

- oo **Integrated Testing.** Minimizing duplicative testing through optimized use of combined test resources.

- oo **Operational Testing.** Streamlining operational testing through distributed interactive simulation technologies.

- oo **Configuration Control.** Contractor-maintained configuration control through the end of Engineering and Manufacturing Development to reduce costly Government oversight and control.

- oo **Government Furnished Equipment (GFE).** Minimizing the use of GFE in order to promote a "system-level" contract approach and avoid costs for contractor control of GFE.

- oo **Best Value.** Contracts awarded through best value source selection techniques.

- oo **Long-term Contractual Relationship.** Using a long-term relationship with the contractor to achieve program stability and commitment to product quality from development through production and fielding.

- o **Government Oversight Objectives:**

- oo The AFAS/FARV streamlined acquisition strategy incorporates reduced milestone reporting requirements and seamless contracting to shorten development time on the overall program.

- o **Statutory/Regulatory Relief.**

- oo Specific statutory/regulatory waivers will be identified in the proposals submitted by perspective offerors when received in August 1994.

oo The judicious waiver of statutes/regulations will permit the APAS/FARV DEM/VAL contract to be executed in a more efficient manner consistent with best value principles.



DEPARTMENT OF THE ARMY
OFFICE OF THE PROJECT MANAGER FOR TRAINING DEVICES
12350 RESEARCH PARKWAY
ORLANDO, FLORIDA 32826-3224

REPLY TO
ATTENTION OF:

AMCPM-CSTS

22 MAR 1994

MEMORANDUM FOR COMMANDER, SIMULATION TRAINING AND INSTRUMENTATION
COMMAND, 12350 RESEARCH PARKWAY, ORLANDO,
FL 32826-3276

SUBJECT: Request for Exemption to Milestone Decision Documents
and Functional Requirements

1. References:

- a. DODI 5000.2
- b. AR 70-1
- c. Memorandum, AAE, 28 Jan 94, SAB.

2. As the Milestone Decision Authority (MDA) for the Fire Support Combined Arms Tactical Trainer (FSCATT), and with regard to its status as a DOD Acquisition Pilot Program (DAPP), request you approve the following waivers for the FSCATT program.

a. Milestone Decision Documentation. DODI 5000.2 outlines the documentation requirements for a milestone decision review. These include many stand-alone documents such as:

- (1) Test & Evaluation Master Plan (TEMP)
- (2) Program Cost Estimate
- (3) Independent Cost Estimate
- (4) Cost & Operational Effectiveness Analysis (COEA)
- (5) Acquisition Program Baseline
- (6) Manpower Estimate Report
- (7) Integrated Program Summary (IPS)
- (8) Integrated Program Assessment (IPA)

DODI 5000.2 goes on to state that "the purposes of the stand-alone supporting documentation are to comply with applicable statutorily imposed requirements, such as the TEMP and ICE, and to meet the information needs of the milestone decision authority, supporting staff, and review forums." Furthermore,

ANCPM-CSTS

SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

AR 70-1, paragraph 3-4c., states that "the documentation will be tailored to the specifics of the program at the discretion of the MDA." However, the lead paragraph under 3-4 of AR 70-1 states "while the extent of the review will vary according to the needs of the particular program, the IPS and IPA, prepared by the PM and the MDA's functional support staff, respectively, will be prepared and used for each milestone review on all programs." This paragraph goes on to say that "the IPA itself will not be deleted from the review process." Request for exemption to those documentation requirements not required by statute and those that AR 70-1 allows the MDA to exempt. As FSCATT is an ACAT IV program, the laws concerning the TEMP and the ICE do not apply. As such, the only documentation that AR 70-1 does not allow the MDA to exempt are the IPS and the IPA. The IPS was tailored to meet the requirements of the program and is enclosed for your consideration. At your direction, your functional support staff will develop the accompanying IPA. Request exemption from all others listed above.

b. Milestone Requirements. DODI 5000.2, part 3, outlines the purposes and functions for each milestone. DODI 5000.2, part 2, states that "the number of phases and decision points must be tailored to meet the specific needs of individual programs." In concert with the intent of DODI 5000.2, request the MDA grant authority to proceed into Engineering and Manufacturing Development (EMD) through and including production. This equates to a milestone II/III decision.

c. Critical System Characteristics. DODI 5000.2, part 4, section C, requires "the MDA will approve the final list of critical system characteristics as part of the Milestone II decision." Request waiver from this requirement. The FSCATT RFP is completely functionally based and requires the offerors to perform cost/schedule/performance trade-offs as part of their development efforts.

d. Reliability and Maintainability Considerations. DODI 5000.2, part 6, section C, requires the MDA to use reliability and maintainability considerations at milestone decision points. The FSCATT RFP requires a certain availability for which the trainer must be ready for training. Specific reliability and maintainability objectives are not mandated in the FSCATT RFP. Request the MDA exempt FSCATT from these considerations.

2. As stated in AR 70-1, paragraph 1-3.a., "the MDA may exempt the program from the functional requirement." Request exemption from the following functional requirements for the FSCATT program.

AMCPM-CST8

SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

a. DODI 5000.2, part 6, section D, requires every program to have a Computer Resources Life-Cycle Management Plan (CRLCM). Request the MDA exempt FSCATT from this requirement.

b. DODI 5000.2, part 6, section H, requires "a human factors engineering program will be established for each system acquisition." On FSCATT, the human factors engineering program is encompassed in the integrated systems engineering program. Request the MDA allow FSCATT to proceed along this path.

c. DODI 5000.2, part 6, section K, states "design to cost objectives may also be established for acquisition category II, III, and IV programs as determined by the milestone decision authority." We do not wish to have the MDA establish any design to cost objectives for the FSCATT acquisition.

d. DODI 5000.2, part 6, section O, requires "the producibility of the emerging product design, risk reduction efforts undertaken, and plans for proofing new or critical manufacturing processes will be specifically assessed" at milestone II. Furthermore, it states that milestone III "will be supported by a production readiness review." Producibility engineering is viewed as an integral part of the overall systems engineering approach required to be addressed and implemented by the FSCATT RFP. Request that FSCATT be allowed to proceed based upon this approach and be exempted from the requirement to establish a formal producibility program.

e. DODI 5000.2, part 6, section P, mandates "for software developments, a quality assurance effort as defined in DOD-STD-2168 will be established." FSCATT doesn't impose any Government mandated programs upon the contractor. Request FSCATT be allowed to proceed with evaluating the contractor's proposed quality processes for adequacy instead of mandating Government programs.

f. DODI 5000.2, part 6, section R, states "an effective parts control program shall be established in each acquisition program." As stated above, FSCATT does not impose any Government program. Our goal is to allow offerors to propose the processes that they feel are most effective for their entity and then the FSCATT team will evaluate them for adequacy. Request the MDA authorize FSCATT to proceed this way.

g. DODI 5000.2, part 7, section A, requires an Integrated Logistics Support Plan (ILSP). Since under FSCATT logistic engineering is considered to be encompassed within the systems engineering approach, and since the FSCATT RFP requires a detailed supportability analysis, request the MDA exempt FSCATT

AMCPN-CSTS

SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

from the requirement to generate an ILSP.

h. DODI 5000.2, part 7, section B, requires the establishment of a formal MANPRINT and human factors engineering program. Again, all aspects of the project engineering disciplines are addressed under the FSCATT systems engineering approach. Request FSCATT be exempt from this functional requirement.

i. DODI 5000.2, part 9, section A, dictates that a "configuration management program shall be established." FSCATT requires the contractor to maintain configuration control for the life of the contract using his preapproved process, we do not mandate Government programs in the FSCATT RFP. Request the MDA grant an exemption to this requirement.

j. DODI 5000.2, part 9, section B, requires "a data requirements review board be convened before issuing a solicitation for any acquisition having a potential cost of \$5 million or more." Request the MDA exempt FSCATT from this requirement.

k. DODI 5000.2, part 11, section A, establishes the requirement for program baselines at each milestone decision review. Request the MDA exempt FSCATT from this requirement.

l. DODI 5000.2, part 11, section B, outlines the need to have cost reporting on all programs. In keeping with the stated procedures that "cost and schedule performance data provided to the Government will be summarized directly from the same systems used for internal contractor management," the FSCATT RFP will require each offeror to explain how his proposed cost and schedule performance reporting system meets the requirements of the Government. STRICOM will verify whether the offerors' reporting systems fulfill our need. No specific exemption is requested/required for this approach.

3. Under your authority as the MDA and as Commander of STRICOM, request exemption from locally imposed procedures which are extensions of STRICOM's attempt to implement DODI 5000.2 and AR 70-1, as well as those other local procedures deemed so by the Director of Acquisition.

4. Request exemption from the specifically separated division of duties delineated in AR 73-1 wherein numerous agencies perform independent test, analysis, and reporting prior to each milestone decision review. FSCATT will solicit and take full advantage of the established expertise within the test community, but the STRICOM test and evaluation directorate will conduct and report

ANCFM-CSTS

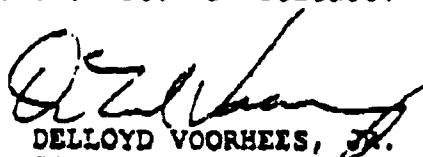
SUBJECT: Request for Exemption to Milestone Decision Documents
and Functional Requirements

the results of any FSCATT testing.

5. Request exemption from the requirement to type classify as outlined in AR 70-40. STRICOM will continuously support FSCATT throughout its lifecycle satisfying all of the benefits gained from the type classification process. Accompanying this request is the request for exemption from the requirement to gain outside agency safety release. AR 385-16 calls for TECOM to provide such an assessment. With STRICOM actively participating in the FSCATT development process, safety will be a key ingredient in every decision consideration. A final safety release will be evaluated and issued within the charter of the STRICOM integrated engineering process.

6. As STRICOM participates in the FSCATT development and fielding, and with STRICOM as the life-cycle manager, the need for the issuance of a separate material release becomes less important. Request exemption from the requirements of AR 700-142 for the issuance of a stand-alone material release.

Encl
as



DELLOYD VOORHEES, JR.
COL, IN
Project Manager Training Devices

As the Milestone Decision Authority for the Fire Support Combined Arms Tactical Trainer, I approve the above requests for exemptions and waivers.

JOHN F. MICHITSCH
Brigadier General, U.S. Army
Commanding

NOTES

Firefinder p31 Program



**Maureen A. Molz
Project Leader**

Product Manager Firefinder

UNCLASSIFIED

SEAE-IEW-FF

25 April 1994

POINT PAPER

SUBJECT: FIREFINDER P³I Program

OBJECTIVE: A four (4) year EDM effort to develop an Advanced FIREFINDER fabrication of two (2) prototypes and support test and evaluation. The EDM effort will be followed by a production contract.

FACTS:

Type of Contract: Competitive RDT&E Contract
Type to be determined

Schedule: Contract Award FY98
Production Contract Award FY01

Effort: Four (4) year RDT&E effort

BRIEFER: Maureen Molz, Project Leader, FIREFINDER P³I Program

ACTION OFFICER:
Maureen Molz
Project Manager
P³I Program
(908) 544-5366

BEST AVAILABLE COPY

Firefinder P31 Program

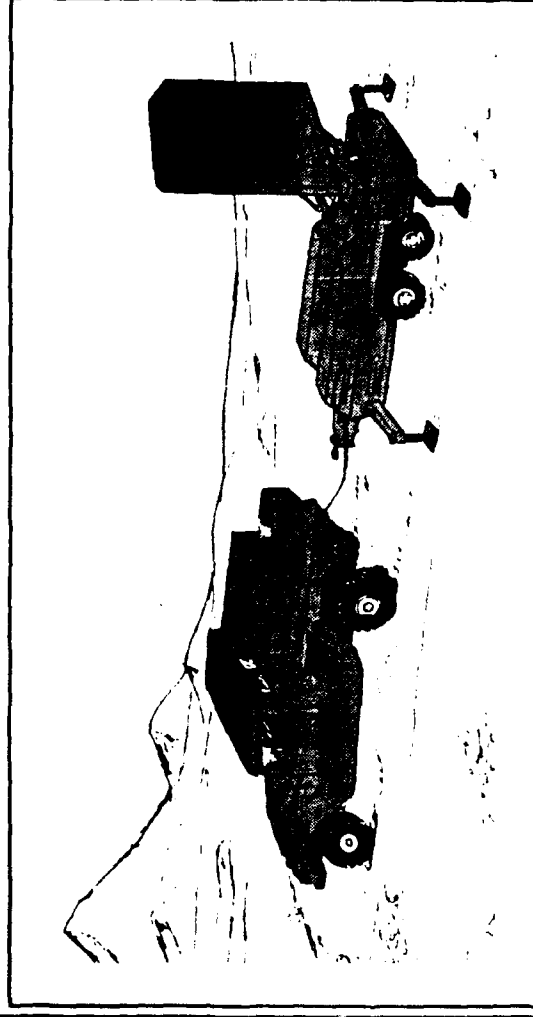
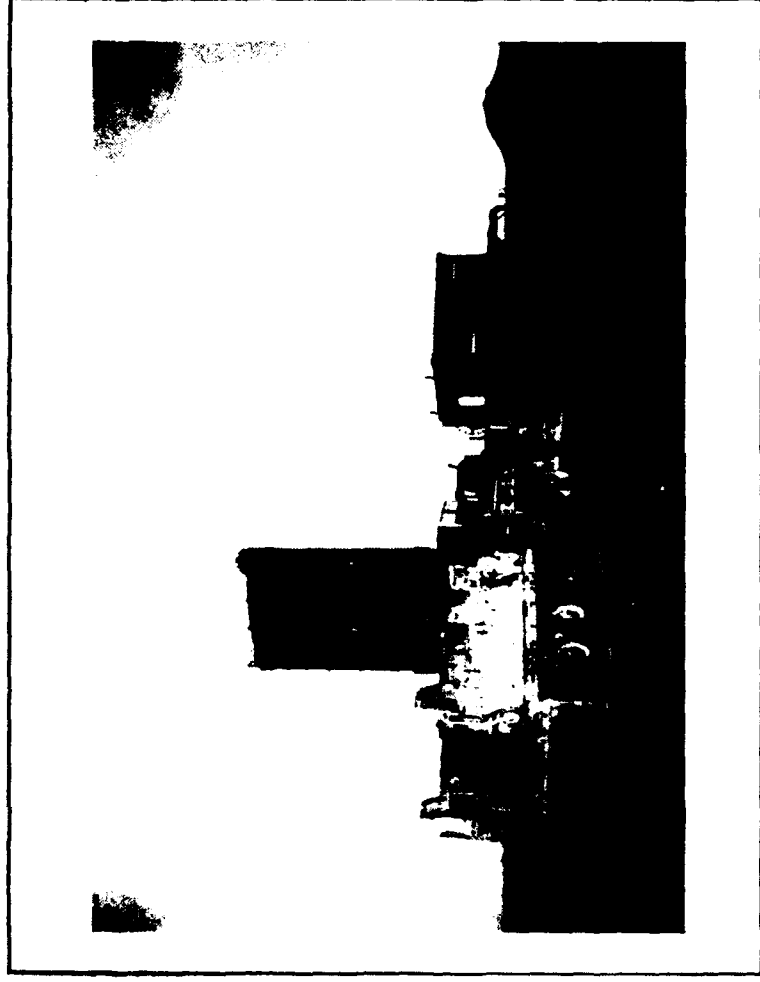
DESCRIPTION

- Upgrade the Antenna Transmitter Group to Provide Increased Target Throughput, Increased Range Coverage and Missile Detection Capability in a Highly Mobile, Transportable and Survivable System.

Firefinder P31 Program

DESCRIPTION

- Currently Indirect Fire Threats Have Longer Ranges Than the AN/TPQ-37 Specification and Advanced Shooter Capabilities Cannot be Utilized to Their Full Potential due to Limited Sensor/Targeting Capabilities. The P31 Program is Designed to Provide These Capabilities.



Firefinder P³I Program

STATUS

- a. Existing Operational Capabilities:
 - AN/TPQ-36(V)8
 - AN/TPQ-37 Block I
- b. Potential System/Component Concepts:
 - Solid State/Monolithic Microwave Integrated Circuits (MMIC)/Active/Semi-Active/Distributed Tubes
 - Track While Scan
 - Bistatic
 - Continuous Wave

* Must use AN/TPQ-36(V)8 Signal Processor Architecture

Firefinder P31 Program

OBJECTIVES

- Technical
 - Increase Range (2x)
 - Increase Throughput (50/min)
 - Simultaneous Friendly Fire Information
 - Improved Survivability
 - Reduced Crew Size (12 to 6)
 - Improved Transportability and Mobility
 - Missile Detection Capability

Firefinder P31 Program

OBJECTIVES

- Program
 - Operational Requirements Document by 2QFY95
 - Engineering, Manufacturing and Development (EMD) Award 1QFY98 (Qty 2)
 - Production Award 1QFY01(Qty 20)

Firefinder P31 Program

REQUIREMENTS

Features:

- Coverage and Waveform Flexibility
- Target Classification Capability
- Simultaneous Missile Detection
- Self Survey for Quick Deployment

Applicable Technologies for R&D

- Smaller, Lighter Prime Power Sources
- Solid State/MMIC/Active/Semi-Active Arrays
- Bistatic
- Continuous Wave (CW)

Firefinder P31 Program

PAYOFFS

- Performance
 - Increased Range
 - Greater Throughput
 - Mission Flexibility
 - Increased Time-on-Station
 - Improved Deployability
- Cost
 - Reduced Personnel Cost (50%)
 - Reduced Operations and Sustainment Cost

Firefinder P31 Program

MILESTONES

FY95

- Operational Requirements Document Approval

FY96

- Solicitation Release

FY97

- Milestone Decision Review II

FY98

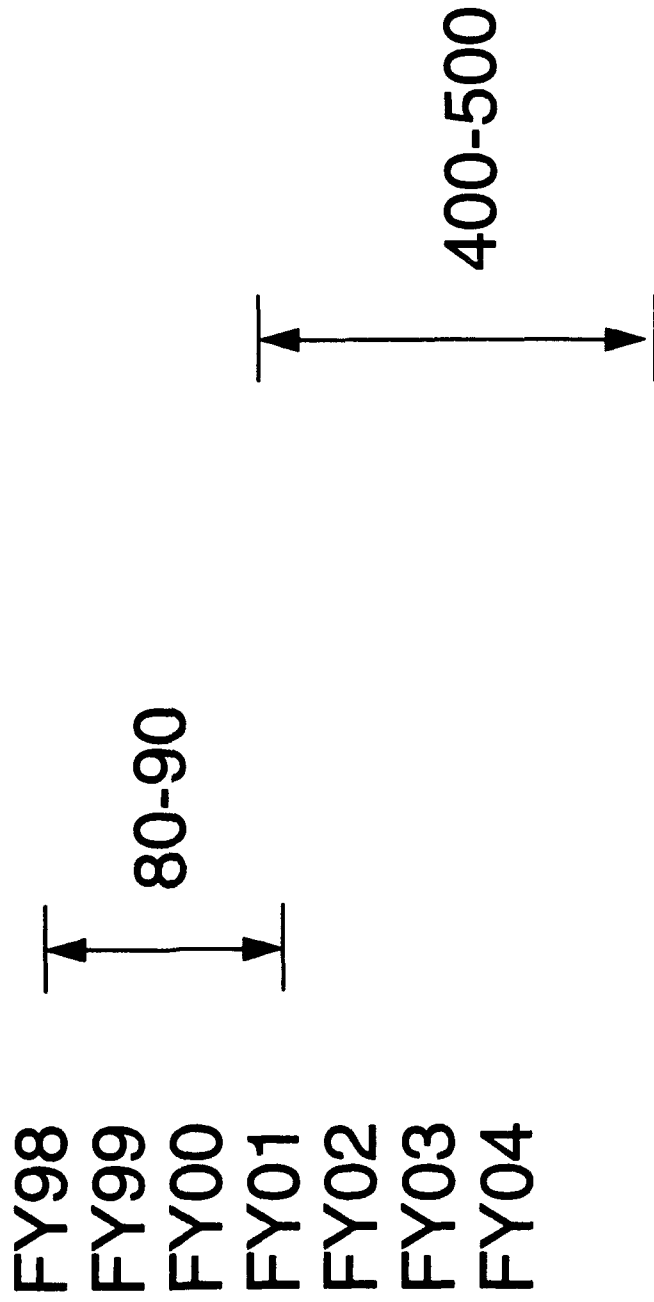
- Contract Award - Engineering and Manufacturing Development

FY01

- Production Contract Award

Firefinder P31 Program

FUNDING PROFILE



Firefinder P³I Program

CONTRACT OPPORTUNITY

Title:	Firefinder P ³ I Program
Objective:	Improved Antenna Transmitter Group
Proposed Contract Type:	To be Determined
Key Milestones:	RFP - 3QFY96 CA - 1QFY98
Estimated Value:	EMD 80-90M Production 400-500M
Point of Contact: Telephone:	Maureen Molz 908-544-5366

NOTES

IEW COMMON SENSOR SYSTEMS

Mr. William S. Hayden

Deputy Project Manager Signals Warfare



UNCLASSIFIED

26 Apr 1994

POINT PAPER

SUBJECT: Procurement of IEWCS Systems

OBJECTIVE: To provide for integration of production units of Ground Based Common Sensor-Light, Ground Based Common Sensor-Heavy, Advanced QUICKFIX, and the United States Marine Corps Marine Electronic Warfare Support System. Subsystems will be provided by separate contractors for integration into the appropriate systems.

FACTS:

Type of Contract: Competitive
Fixed Price

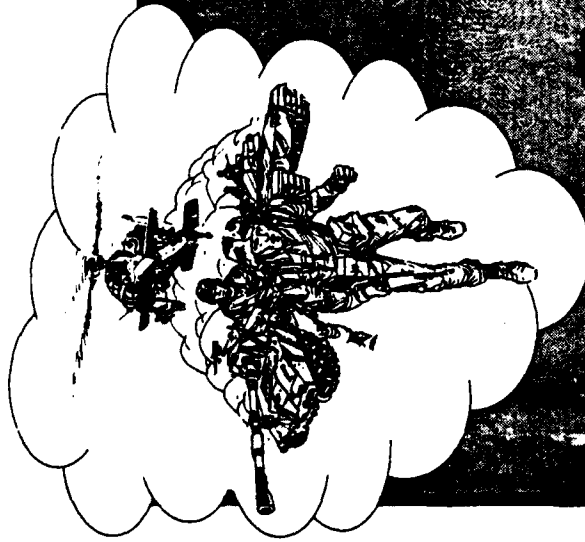
Schedule: Contract Award FY96

Effort: Contract award will be for integration of systems for FY 1996 with options for 4 additional years.

BRIEFER: William S. Hayden, Deputy Project Manager Signals Warfare.

ACTION OFFICER:
Tom Hurt
Business Manager
PM Signals Warfare
(703) 349-5212

IEW COMMON SENSOR (GBCS-L, AQF, GBCS-H)



A new Combat Multiplier
giving the Commander the
ability to Outmaneuver and
Destroy the enemy

by

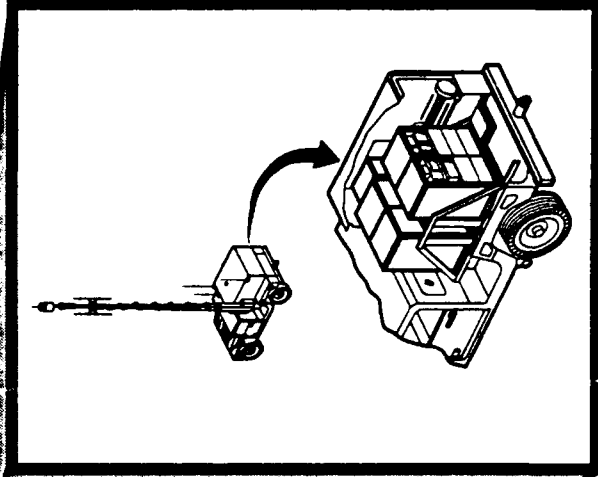
- Precision Location
for **Targeting**
- Surgical Electronic **Attack**
- Signals **Exploitation**

Use of IEWCS
subsystems is a
tangible and
preeminent
example of
Horizontal
Technology
Integration

IEW COMMON SENSOR

Ground Based Common Sensor - Light

The Ground Based Common Sensor-Light (GBCS-L) is an integrated system using IEW Common Sensor subsystems. The system intercepts and jams both single channel and LPI signals and when netted with AQF provides targeting information to the battlefield commanders. The common ELINT subsystem intercepts non-communications emitters and provides geolocation for target development.



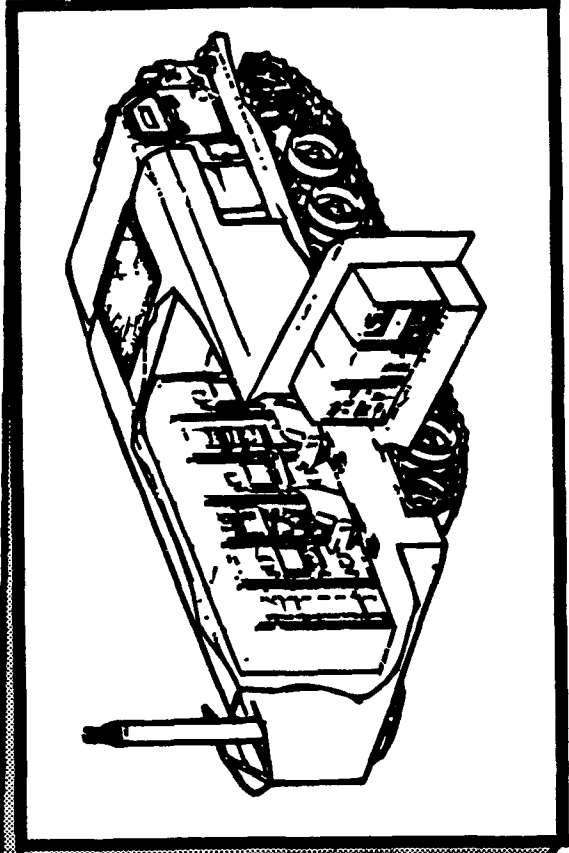
- TACJAM-A ESM/ECM Subsystems
- CHALS-X Communications Precision Location Subsystem
- CMES ELINT/Non-Comm Precision Location Subsystem
- SINGARS Combat Net Radio
- Mission Equipment Data Link
- Host Interface Unit
- GPS (PLGR)
- Light Workstation
- Under the Hood Power
- Self-erecting Mast
- HHMV (M1097) w/Electronics Enclosure

IEW COMMON SENSOR

Ground Based Common Sensor - Heavy



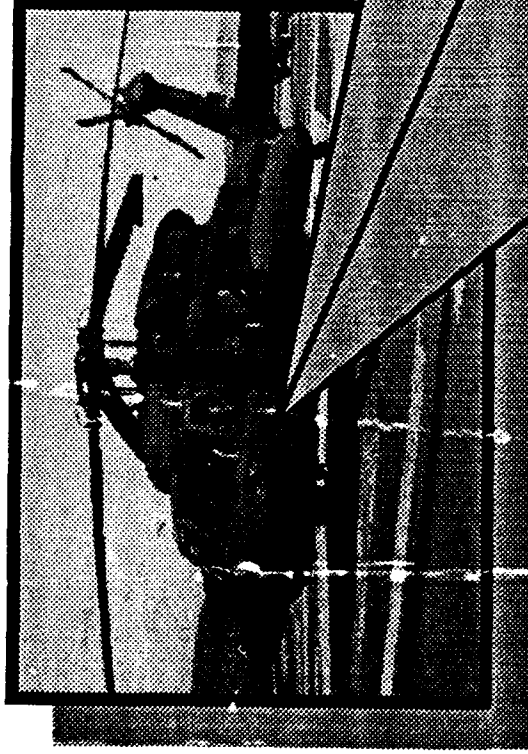
The Ground Based Common Sensor-Heavy (GBCS-H) is an integrated system using IEW Common Sensor subsystems. The system intercepts and jams both single channel and LPI signals and when netted with AQF provides targeting information to the battlefield commanders. The common ELINT subsystem intercepts non-communications emitters and provides geolocation for target development.



- TACJAM-A ESM/ECM Subsystems
- CHALS-X Comm Prec Loc Subsystem
- CMES ELINT/Non-Comm Prec Loc Subsystem
- SINGARS Combat Net Radio
- RF Distribution Subsystem
- Mission Equipment Data Link
- Host Interface Unit
- Common Workstation
- ANUYH-15 DTSR
- GPS (MAGR and INS)
- Electronic Fighting Vehicle System (EFVS)
Joint w/C2V and JSTARS GSM
- 60kw Primary Power Unit
- 20m Self-erecting Mast
- Environmental Control Unit
- Biological/Chemical Protection

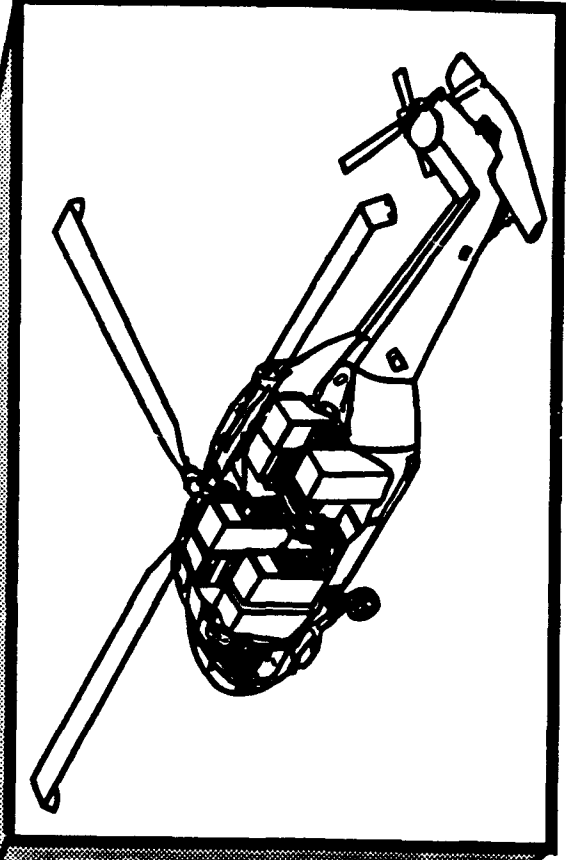
IEW COMMON SENSOR

Advanced QUICKFIX



Advanced QUICKFIX (AQF) is an integrated system using IEW Common Sensor subsystems. The helicopter system performs Electronic Support and Electronic Attack, gains intelligence, and locates enemy tactical emitters. The AQF is operated in single or multiple aircraft missions in an Army divisional area and Interoperates with Ground Based Common Sensor - Heavy (GBCS-H), GBCS-Light (GBCS-L), other AQFs, and other systems using IEWCS in a network to obtain accurate emitter locations. Each system provides the capabilities to detect, locate, collect, analyze, exploit and attack both single channel and LPI communications. Also, each system provides Electronics Intelligence (ELINT) intercept and location capability against non-communications emitters.

- TACJAM-A ESM/ECM Subsystems
- CHALS-X Comm Prec Loc Subsystem
- CMES ELINT/Non-Comm Prec Loc Subsystem
- SINGARS Combat Net Radio
- RF Distribution Subsystem
- Mission Equipment Data Link
- Host Interface Unit
- Common Workstation
- AN/UJH-15 DT3R
- GPS (MAGR and INS)
- BLACKHAWK Helicopter EH-60A
- Aircraft Survivability Equipment (ASE)
- Environmental Control Unit

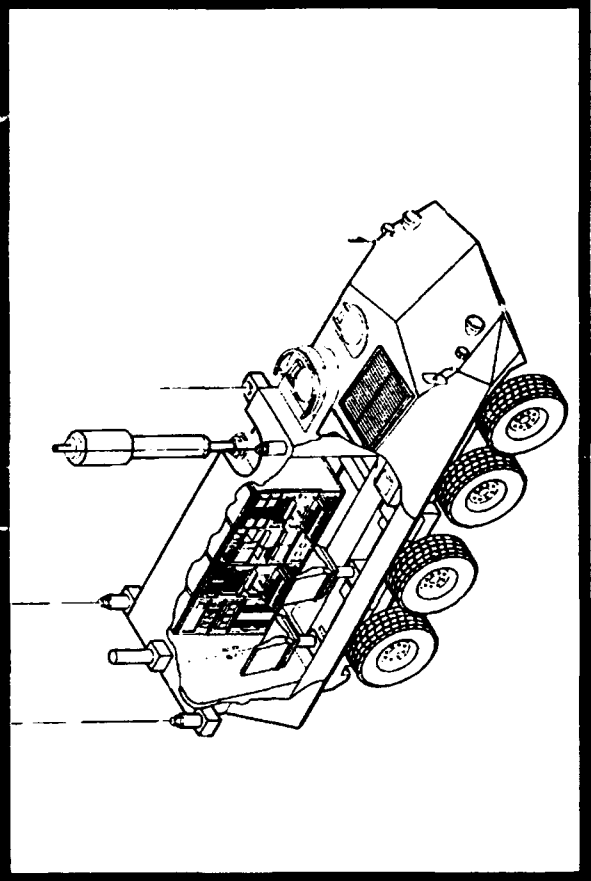


IEW COMMON SENSOR

Mobile Electronic Warfare Support System (MEWSS)



The Mobile Electronic Support System (MEWSS) is an integrated system using IEW Common Sensor subsystems. The system provides ground collection, emitter location, targeting and Electronic Attack (EA) for use in gaining intelligence, locating and jamming enemy tactical communications emitters. The MEWSS is operated in single or multiple platforms in a USMC MAGTF area typically at or beyond the FLOT and interoperates with all other IEWCS platforms. Also the MEWSS provides Electronics Intelligence (ELINT) against non-communications emitters.

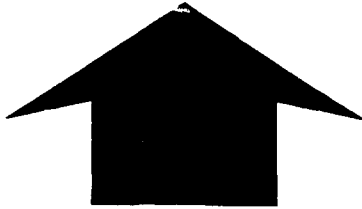


- TACJAM-A ESM/ECM Subsystems
- CHALS-X Comm Prec Loc Subsystem
- CMES ELINT/Non-Comm Prec Loc Subsystem
- SINGARS Combat Net Radio
- Mission Equipment Data Link
- GPS (MAGR/PLGR)
- Under the Hood Power
- Self-erecting Mast
- Light Armoured Vehicle (LAV)
- HF Command Radio subsystem

IEW COMMON SENSOR

Systems Status

	Current CEWI Bn			IEWCS CEWI Bn		
	Armor/Mech	Airborne	Light	Armor/Mech	Airborne	Light
FIND (Intercept)	31	18	12	26	20	20
	66	24	21	80	80	80
	28	15	12	80	80	80
	5	0	0	80	80	80
	Y	Y	Y	G	G	G
				G	G	G
	Y	Y	Y	G	G	G
	Y	Y	Y	G	G	G
				G	G	G
	Y			G	G	G
FIX (Situation/Target Development)				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
Targetable Intel (Soft Kill) (Target Accuracy, Denial/Disruption)	15	6	3	18	6	6
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G
				G	G	G



IEW COMMON SENSOR Systems Objectives

- **Software modules/CCAs vice re-design of hardware to counter new threats**
- **Expansion of ECM for identified "need" areas**
- **Rapid sensor re-programming capabilities**
- **Complementary platform payload integration**
- **Continued refinement and implementation of rapid**

IEW COMMON SENSOR Systems Requirements

- **Production of GBCS-L, GBCS-H, AQF**
- **Integration of GFE Subsystems**
- **Total System Integrity**
- **System Level Acceptance Tests**

IEW COMMON SENSOR

Systems

Payoffs

- **Features**

Common Subsystem on all platforms

Employs US Army's IEW open system architecture

Self-calibration

Built-in simulator/test

Field-proven NDI

- **Benefits**

Reduced manpower and ILS requirements

Accommodates growth & interoperability

Simplifies unit interchange

Embedded training

Reduced maintenance costs

Proven performance & reliability

Reduced life cycle costs

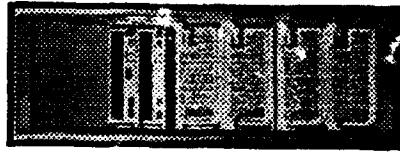
IEW COMMON SENSOR

Systems

Major GFE Items

Subsystems

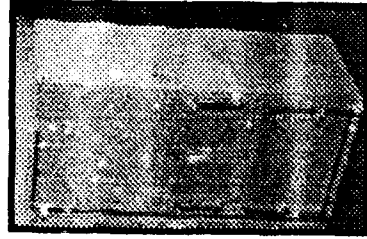
TACJAM-A ECM



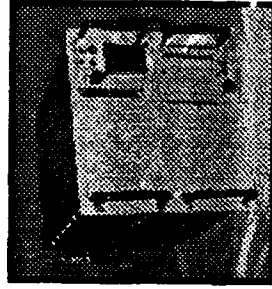
CMES



TACJAM-A ECM



CHALS-X



Carriers

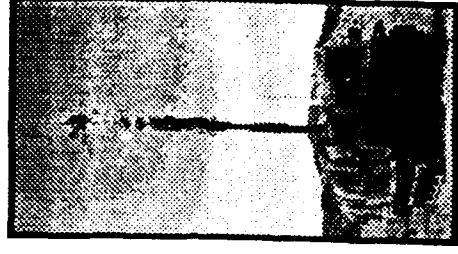
EH-60A



HMMWV



Track Carrier
w/enclosure



IEW COMMON SENSOR

Systems Milestones

- **FY - 95 & Beyond**
- **4 QTR FY94 - Issue Draft RFP**
- **2 QTR FY95 - IEWCS Development Test**
- **3 QTR FY95 - IEWCS Operational Test**
- **4 QTR FY95 - Field GBCS-L & AQF R&D Systems**
- **1 QTR FY96 - Award GBCS-H, GBCS-L, AQF, MEWSS Production Contract**
- **4 QTR FY97 - Field Initial Systems**

IEW COMMON SENSOR Systems Funding Profile

	PROC (\$M)
FY 96	\$75 - 100
FY 97	\$80 - 100
FY 98	\$80 - 100
FY 99	\$80 - 100
FY2000	\$80 - 100

IEW COMMON SENSOR Systems Contract Opportunity

Title:	IEWCS Systems
Objective:	Production of systems
Proposed Contract Type:	FP
Key Milestones:	Contract award FY96
Estimated Value:	\$110.0M to \$140.0M
POC Telephone:	Tom Hurt (703) 349-5212

NOTES



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RESEARCH LABORATORY



ARMY
MATERIEL COMMAND

ELECTRONICS FOR THE INFORMATION AGE

PRESENTED BY:

DR. C.G. THORNTON

DIRECTORATE EXECUTIVE
ELECTRONICS and POWER SOURCES DIRECTORATE
US ARMY RESEARCH LABORATORY
FORT MONMOUTH, NEW JERSEY

UNCLASSIFIED

ELECTRONICS FOR THE INFORMATION AGE

DR. C. G. THORNTON
Directorate Executive
Electronics and Power Sources Directorate
Fort Monmouth, New Jersey

The Army Research Laboratory (ARL) through its Electronics and Power Sources Directorate, located at Fort Monmouth, New Jersey, is acknowledged as a topflight government research and development (R&D) laboratory, chartered to provide the Army with the best electronic devices and components that science and technology can produce. The EPSD program strategically blends incremental and next-generation electronic component development, utilizing our own capabilities and all available sources, to provide the Army the utmost in key operational capabilities.

Our mission is critical because major technology breakthroughs and advances provide extraordinary opportunities for creating smaller components, devices, and subsystems that will provide superior performance at a lower cost for new and improved military systems.

For example, an important research and development thrust that has recently been elevated in importance is Digitization of the Battlefield. Because of its position at the cutting edge of electronics technology, EPSD is able to redirect significant portions of its activities to digitization, helping to insure the success of the concept, and enabling the Army to maintain the technological edge, even in these times of downsizing and reduced funding.

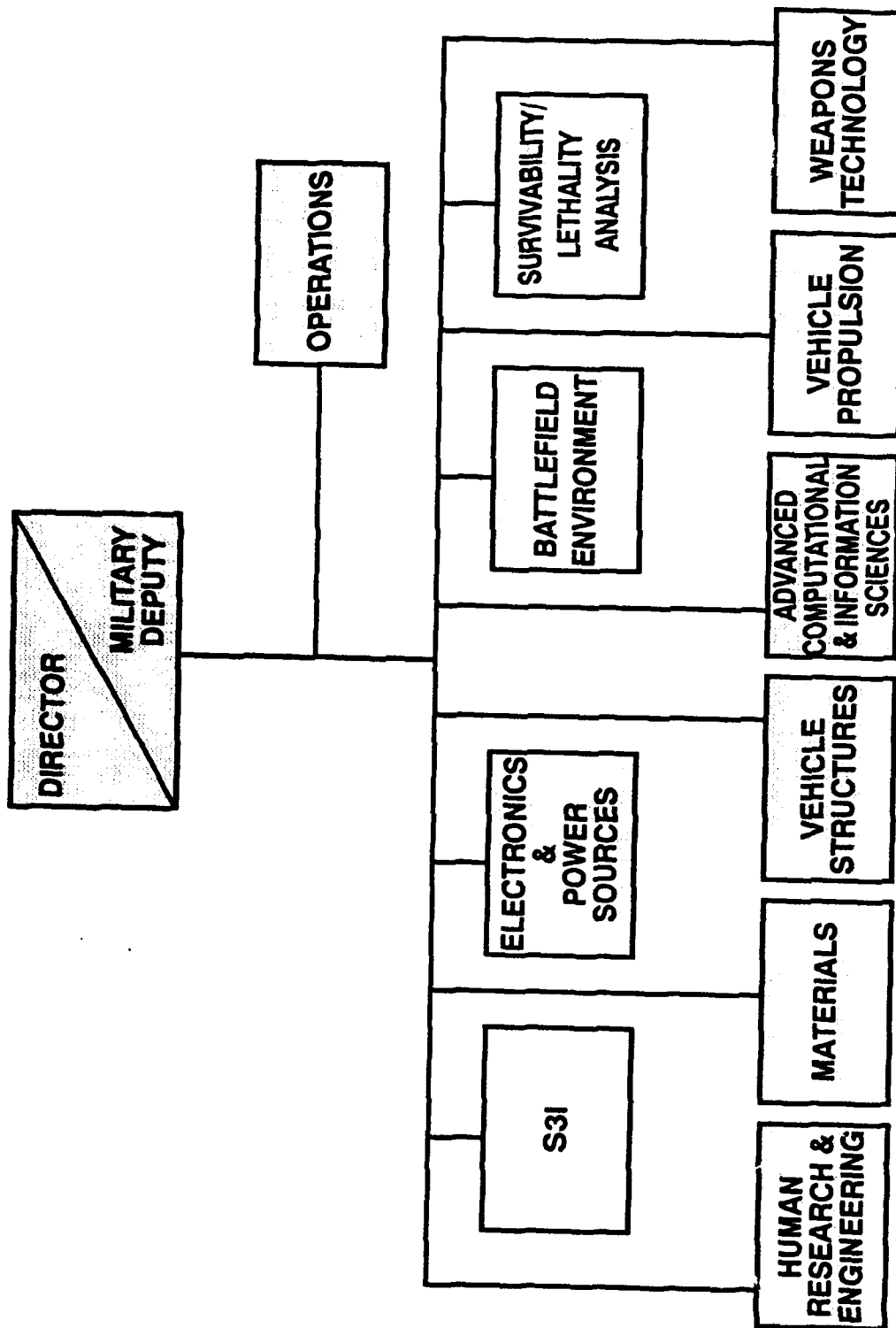
The Directorate is committed to an "open laboratory" policy whereby personnel from industry and academia are encouraged to engage in on-site cooperative efforts utilizing EPSD's unique and sophisticated facilities and high level of scientific expertise to address specific technological barrier problems. Our goal is to exploit the latest scientific advances to meet military needs while fostering development within the commercial economy to insure both the economic and military success of the United States.

EPSD's initiatives and leadership role in technology transfer are well recognized. Using the Cooperative Research and Development Agreements (CRDAs) with industry, EPSD utilizes its technology, facilities, and expertise in technology commercialization and the development of new products. EPSD also pursues an active role in dual-use and defense conversion. The Directorate is actively involved in an innovative well-focused process for transferring technology from the laboratory to the private sector.

EPSD supports small business through a \$4.9 million Small Business Innovation Research (SBIR) Program where technology transfer is integrated into the SBIR Program.

ARMY RESEARCH LABORATORY

PROVIDING AMERICA'S SOLDIERS THE TECHNOLOGY EDGE





US ARMY
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ELECTRONICS AND POWER SOURCES DIRECTORATE

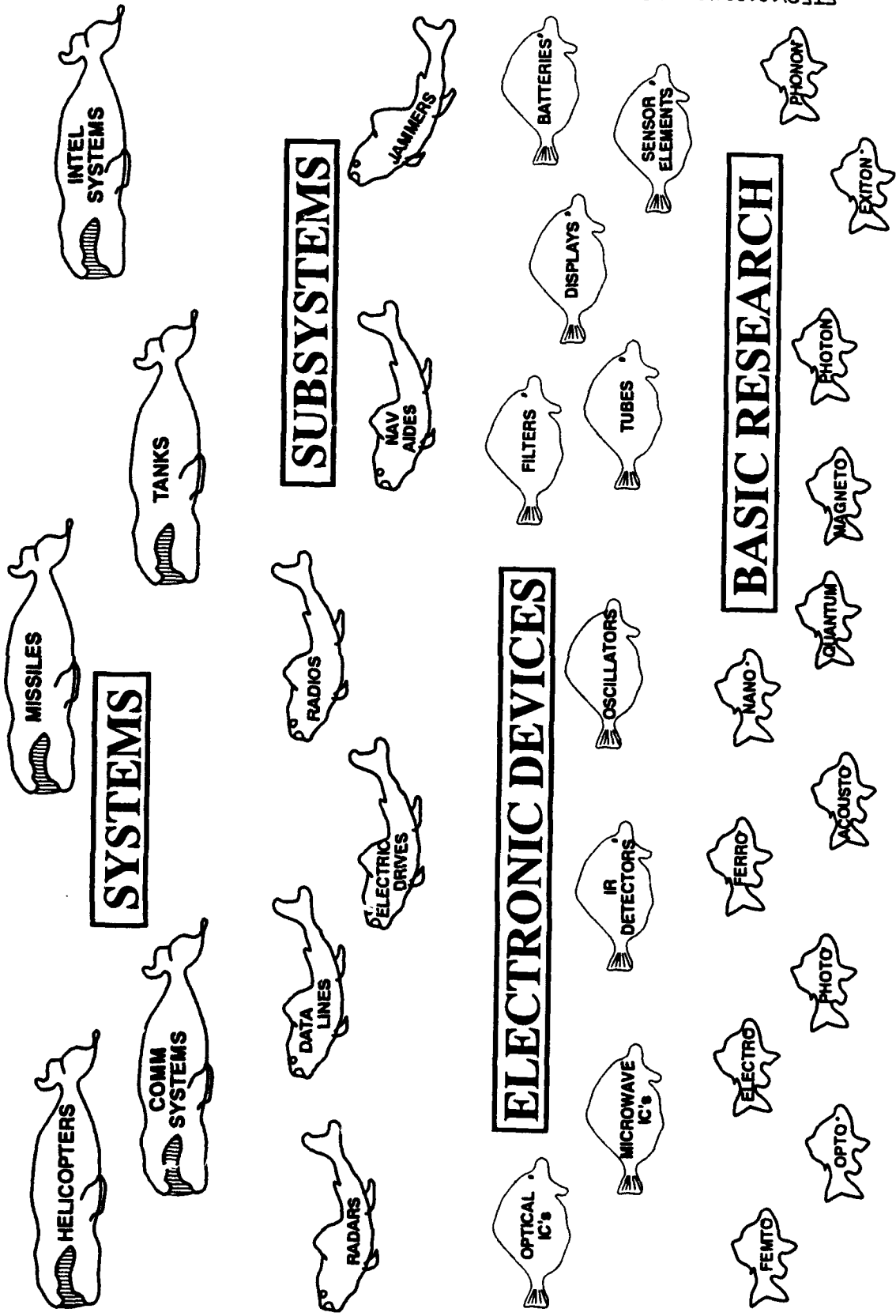


ARMY
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BUSINESS SUB-AREAS

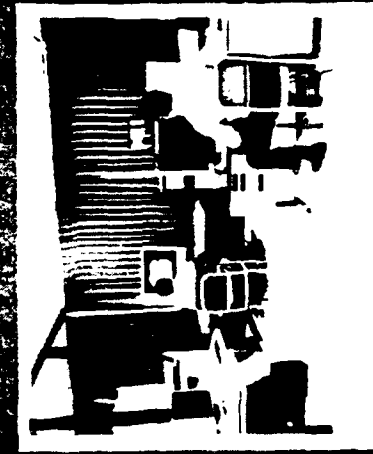
- NANO/OPTOELECTRONIC/PHOTONIC DEVICES
- MICROWAVE/MILLIMETERWAVE/MIMIC DEVICES
- OPTICAL DEVICES AND FOCAL PLANE ARRAYS
- ADVANCED SENSORS AND ACTUATORS
- DESIGN, SIMULATION, MODELING, CONCURRENT ENGINEERING, AND PROTOTYPING
- RELIABILITY AND MANUFACTURING SCIENCE
- ACOUSTO/FERROELECTRONICS
- VIRTUAL ENVIRONMENT
- POWER SOURCES/PULSE POWER

ELECTRONIC TECHNOLOGY FOOD CHAIN

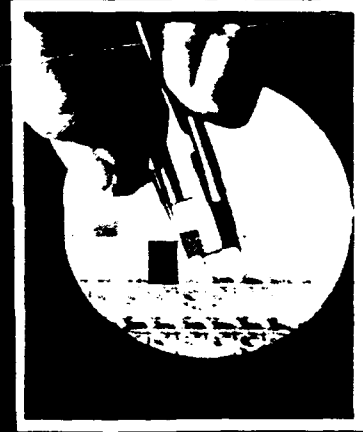
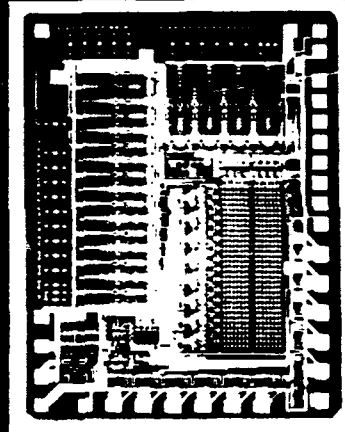
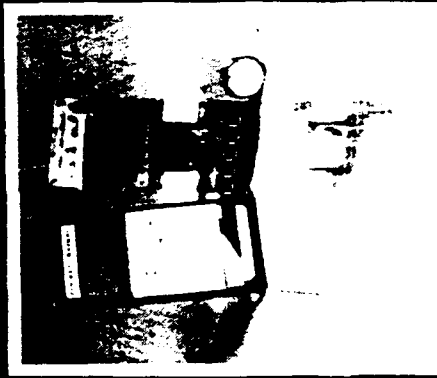


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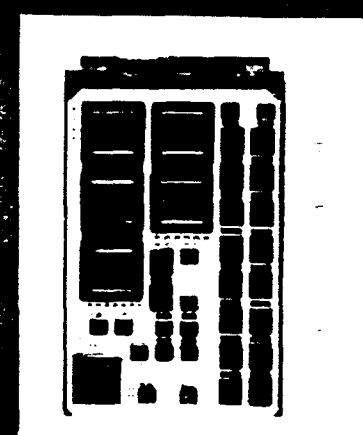
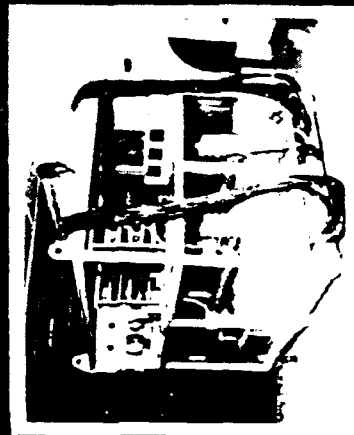
EPSD DEVICE RESEARCH



EPSD DEVICES/COMPONENTS



LITHIUM BATTERIES

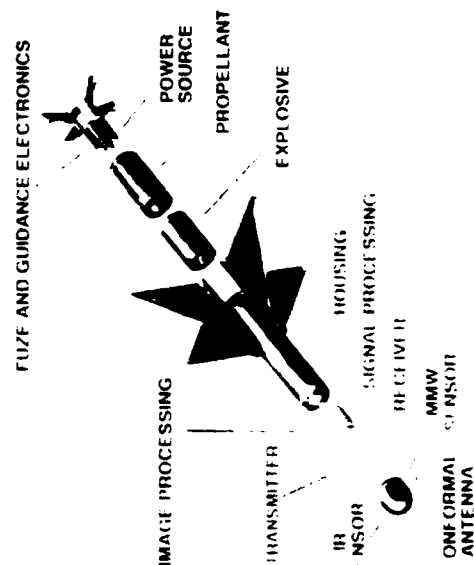


LAND COMBAT APPLICATIONS

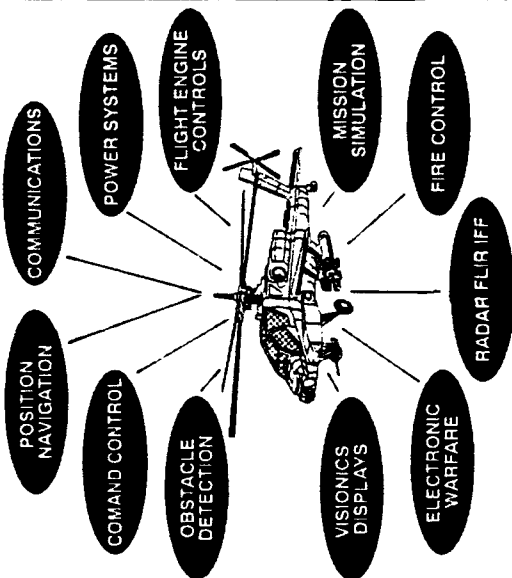
BATTLEFIELD INFORMATION SYSTEM 2015



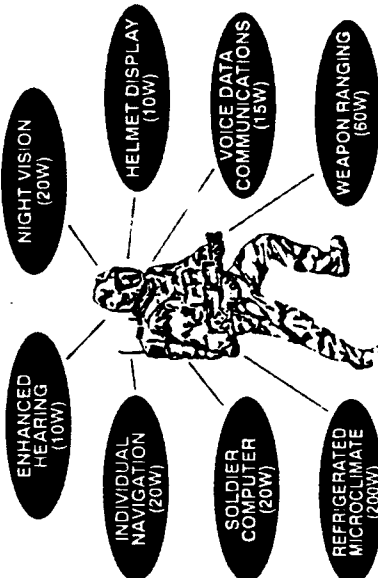
FUTURE MISSILE



FLIGHT SYSTEM FUNCTIONS

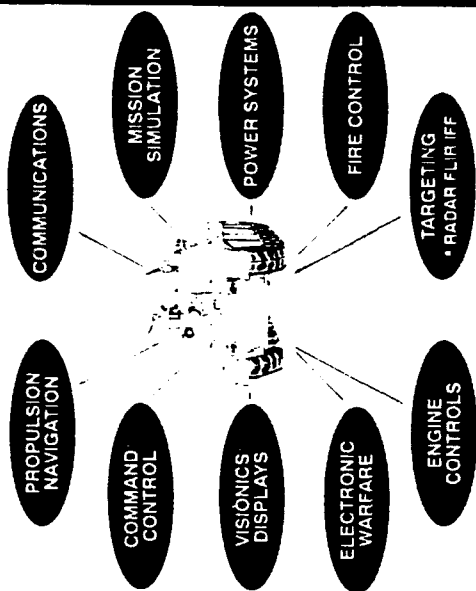


SOLDIER SYSTEM

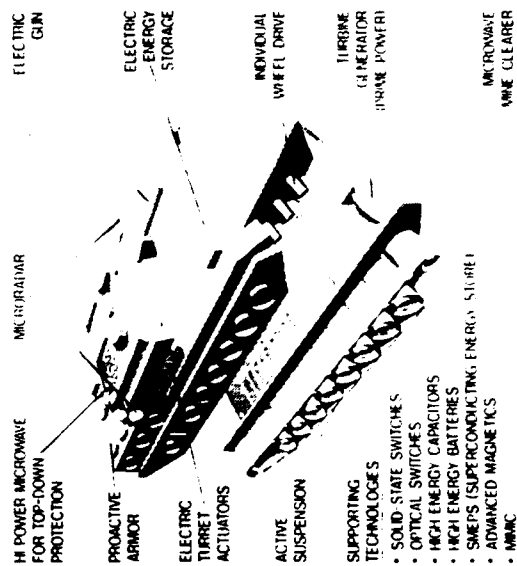


THE FUTURE SOLDIER SYSTEM EXOSKELETON (4500W)

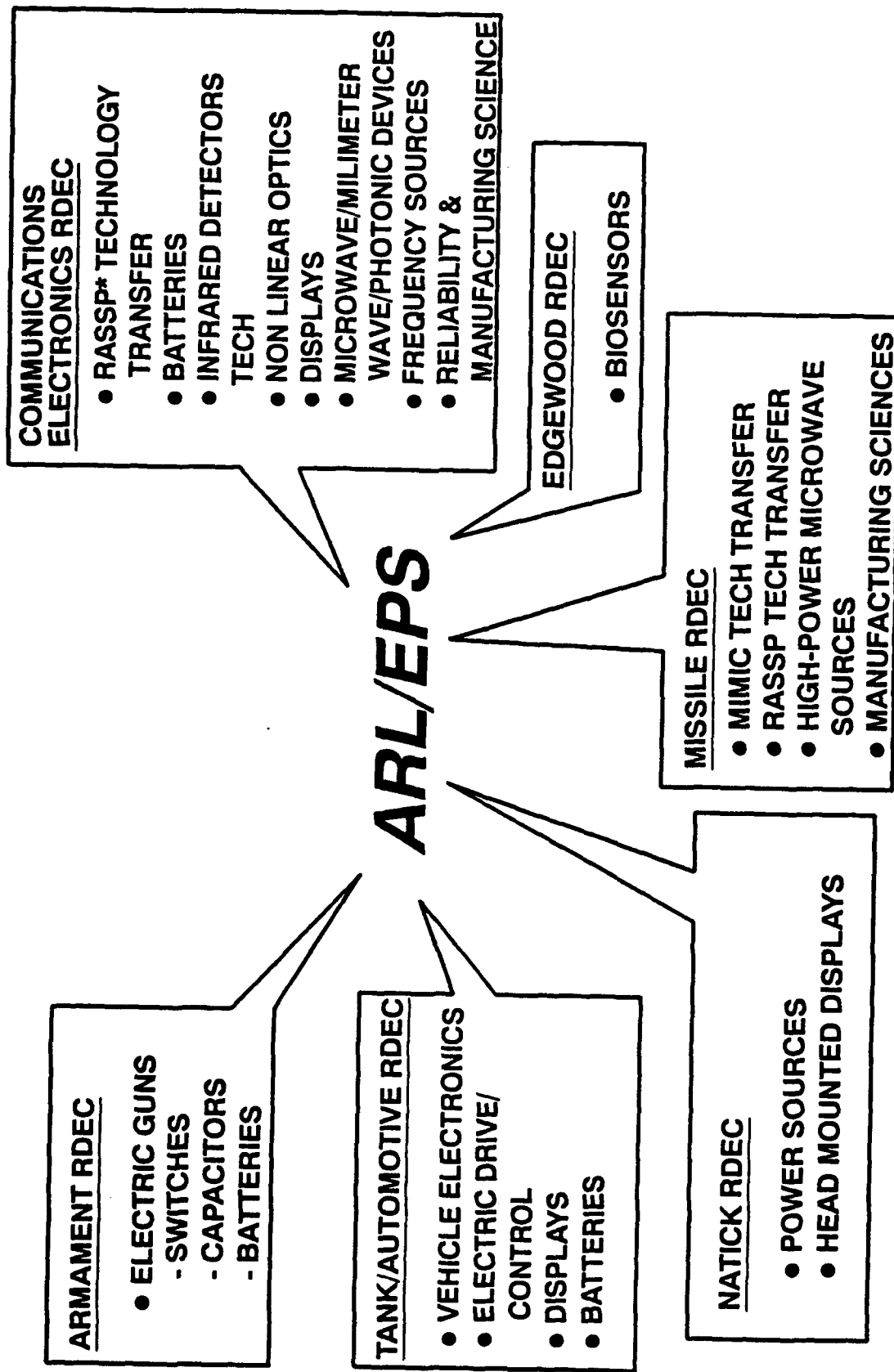
GROUND SYSTEM FUNCTIONS



ELECTRIC TANK



MOU's WITH SYSTEM DEVELOPMENT CENTERS

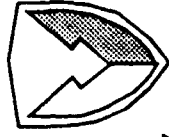


* RASSP - RAPID PROTOTYPING OF APPLICATION SPECIFIC SIGNAL PROCESSORS



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ELECTRONICS AND POWER SOURCES DIRECTORATE TECHNOLOGY PROGRAM ANNEXES (TPAs) WITH CECOM



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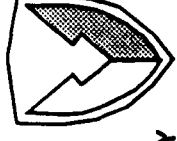
<u>TPA NUMBER</u>	<u>TPA NAME</u>	<u>DELIVERABLE</u>	<u>DOLLARS (M)</u>
EP-CE-01-94	NONLINEAR OPTICAL DEVICES	SPATIAL LIGHT MODULATOR AND OBJECT CORRELATOR	1.40
EP-CE-02-94	IR DETECTOR RESEARCH AND TECHNOLOGY	GROW THIN FILM FERROELECTRIC MATERIAL FOR II-VI DETECTOR	2.70
EP-CE-03-94	VIBRATION RESISTANCE SAW FREQUENCY SOURCES	SURFACE ACOUSTIC WAVE OSCILLATOR FOR ADVANCED THREAT RADAR JAMMER	0.25
EP-CE-04-94	LOW POWER OSCILLATOR FOR SCAMP	DEVELOP ASIC FOR MICROCOMPUTER CONTROL CRYSTAL OSCILLATOR FOR SCAMP	0.30
EP-CE-05-94	ADVANCED EW CHANNELIZER MODULE FOR LIGHT WEIGHT COMINT/ELINT	COMPACT RECEIVER FOR GUARDRAIL II	0.05
EP-CE-06-94	HI SENS RECEIVER METH FOR DETECT/IR/LOC OF LPI SIG	LOW PROBABILITY OF INTERCEPT SIGNAL PROCESSING TECHNIQUES FOR WIDEBAND RECEIVER	0.16



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TPAs WITH CECOM

Continued



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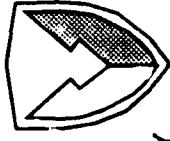
<u>TPA NUMBER</u>	<u>TPA NAME</u>	<u>DELIVERABLE</u>	<u>DOLLARS (M)</u>
EP-CE-07-94	LNA FOR GROUND BASED DSCS	FABRICATE PROTOTYPE LOW NOISE AMPLIFIER FOR SATCOM	0.25
EP-CE-09-94	HIGH ENERGY BATTERIES	PROTOTYPE BATTERIES	1.90
EP-CE-10-94	HPM SOURCES AND COMPONENTS	IMPROVED, HIGH-PRF SOURCE	0.30
EP-CE-11-94	RELIABILITY ASSESSMENT THROUGH PHYSICS OF FAILURE	SOFTWARE & SELECTION CRITERIA SPREADSHEET	0.15
PROPOSED	PHOTONICS FOR RECEIVER TECHNOLOGY	CIRCUIT DESIGN	0.35
PROPOSED	MICROWAVE SUPERCONDUCTING DEVICES	MILLIMETER-WAVE RECEIVER DESIGN	0.40
PROPOSED	INTEGRATED PHOTONIC DEVICES	PROTOTYPE LASERS AND DETECTORS	0.70
PROPOSED	IR DETECTOR RESEARCH	UNCOOLED DETECTOR DESIGNS	2.70
PROPOSED	COST-EFFECTIVE ELECTRONICS VIA PLASTIC-ENCAPSULATED MICROCIRCUITS	USER HANDBOOK	.20



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TPAs WITH CECOM

Continued



ARMY
MATERIEL COMMAND

<u>TPA NUMBER</u>	<u>TPA NAME</u>	<u>DELIVERABLE</u>	<u>DOLLARS (M)</u>
PROPOSED	BACKPACK FUEL CELLS	HYDROGEN GENERATOR	0.70
PROPOSED	LOW COST ELECTRONIC SCANNING	15 GHz PHASE SHIFTERS	0.20
PROPOSED	RASSP TECHNOLOGY TRANSFER	SELECTED PROTOTYPE	0.07

TECHNOLOGY TRANSITIONS FY93-FY94

PRODUCT

TRANSITION TO

- | | |
|---|---|
| • SOLENOID FIELD SOURCE FOR LINEAR BEAM MICROWAVE DEVICE | • MARTIN-MARIETTA |
| • MONOLITHIC RECEIVER AND TRANSMITTER FOR SEARCH AND DESTROY ARMOR (SADARM) | • ALLIANT, AEROJET, HUGHES, M/A COM, TRW, ARDEC |
| • SYSTEM LANGUAGE REQUIREMENTS FOR MIMIC HARDWARE DESCRIPTION LANGUAGE | • INTERMETRICS, RAYTHEON, PERII SYSTEMS INC., EESOF, ARPA, NRL |
| • SINGLE-CHANNEL GROUND/AIR RADIO SYSTEM (SINGGARS) AND GERMAN SEM 93 RADIO INTERFACE FOR INTEROPERABILITY | • MITRE, GERMAN MoD, PM SINGGARS, CECOM |
| • OPERATIONAL AUTOMATED MILLIMETER WAVE LIFE-TEST AND RELIABILITY ASSESSMENT | • TRW, HUGHES, RAYTHEON, TECOM |
| • PRC-70 RADIO 883 CLASS B EQUIV. MICROCIRCUIT | • SARNOFF, CECOM, TOBYHANNA DEPOT |
| • K-BAND JAMMER MODULE FOR PATRIOT UPGRADE | • RAYTHEON, WSMR, PM PATRIOT |
| • MILLIMETER WAVE FREQUENCY MODULATED/CONTINUOUS WAVE MISSILE SENSOR FOR ADVANCED KINETIC ENERGY MISSILE/REACTIVE ARMOR | • HONEYWELL, MICOM, ARDEC |
| • FAST TURN-ON KLYSTRON ELECTRON GUN | • LOS ALAMOS NATIONAL LAB, LAWRENCE LIVERMORE NATIONAL LAB |
| • SUPERCONDUCTING ANTENNA FOR RADAR WARNING RECEIVER | • ARPA, PM ASE, MICOM, NVEDS |
| • SMART BUYER'S GUIDE FOR AFFORDABLE ELECTRONICS | • DESC, CECOM, ADC, NSWC |
| • FINAL DRAFT MANUSCRIPT OF VHDL MODELING HANDBOOK | • MARTIN-MARIETTA, LOCKHEED SANDERS, IBM, SYNOPSIS, VIEW LOGIC, RAYTHEON, HONEYWELL, TI, MOTOROLA |

TECHNOLOGY TRANSITIONS FY93-FY94 (Continued)

<u>PRODUCT</u>	<u>TRANSITION TO</u>
• MICROWAVE MONOLITHIC INTEGRATED CIRCUITS/PHASE SHIFTERS FOR ELECTRONICALLY STEERED JAMMER	• LOCKHEED/SANDERS, NVESD
• NON-DEVELOPMENTAL CHARACTERIZATION	• MOTOROLA, INTEL, DESC, DLA
• PROTOTYPE FIBER-OPTIC-FED SUBARRAY FOR ACTIVE PHASED ARRAY RADARS	• GTE, DREXEL, NVESD
• LIGHT WEIGHT FREQUENCY STABLE 9 GHz BEACON AMPLIFIER	• MOTOROLA, NVESD, PM SOF
• 140 GHz InP GUNN OSCILLATOR FOR IMAGING RADAR	• VARIAN, MICOM, WTD/ARL
• ELECTRONIC INTELLIGENCE SPREAD-SPECTRUM RCVR MODULE WITH SIGNAL ANALYSIS	• LNR, NVESD
• COMMON APERTURE MILLIMETER WAVE/INFRARED DUAL MODE SENSOR	• CHANG INDUSTRIES, MICOM, ARDEC
• LOW MASS FOCUS STRUCTURE FOR ULTRAVIOLET/X-RAY SPACE TELESCOPE	• JPL, NASA, GODDARD
• 44 GHz POWER HIGH-ELECTRON-MOBILITY TRANSISTOR POWER AMP MODULES FOR MANPACK SATELLITE COMMUNICATIONS	• CECOM, SATCOM, PM SCOTT/SCAMP
• ULTRA-LOW NOISE MINI AMPLIFIER FOR MANPACK DIRECT SATELLITE COMMUNICATIONS SYSTEM	• CECOM SPACE/TERRESTIAL DIR.

TECHNOLOGY TRANSITIONS FY93-FY94 (Continued)

PRODUCT

TRANSITION TO

- | | |
|---|---|
| • 19 INCH PLASMA DISPLAY | • PM ALL SOURCE ANALYSIS SYSTEM (PMASAS) |
| • 320x240 FULL COLOR, GRAPHICS & VIDEO PLASMA DISPLAYS | • PHOTONICS, IMAGING TARDEC |
| • TMDE TETHERED DISPLAY | • TMDE |
| • HIGH BRIGHTNESS 16 GRAY SCALE 640 x 480 MONOCHROME ELECTROLUMINESCENT DISPLAY | • PLANAR SYSTEMS, PM-CHS, TMDE |
| • COMPRESSION/DECOMPRESSION WORKSTATIONS | • ITERATED SYSTEMS, FAR EAST SCIENCE ADVISORS OFC |
| • IR FILTERS FOR SOLDIER I.D. SIGNALLING DEVICE | • READ PLASTICS |
| • GENERAL PURPOSE DIGITAL SIGNAL PROCESS OR MULTICHIP MODULE (Prototyped in an LTCC PIN GRID ARRAY MCM) | • DUPONT ELECTRONICS, HILL AFB |
| • OPTICALLY CONTROLLED PHASED ARRAY MODULE FOR NEXT GENERATION COMM. TECHNOLOGY SATELLITE | • LEWIS RESEARCH CTR, - DUPONT ELCTS, NASA |
| • DIGITAL CONTROL SYSTEM FOR A TEMPERATURE, COMPENSATED FERROELECTRIC PHASE SHIFTING SCANNING ANTENNA | • EW/RSTA |
| • SURFACE ACOUSTIC WAVE (SAW) SENSOR BASED HAND-HELD BIOLOGICAL DETECTOR | • ERDEC |



US ARMY
RESEARCH LABORATORY

ARL/ELECTRONICS AND POWER SOURCES STRATEGY



ARMY
MATERIEL COMMAND

- DEFINE A PATH INTO THE FUTURE AND GUIDE THE WORK OF MANY TOWARD THAT OBJECTIVE.
- SERVE AS A STEWARD OF GLOBAL ACADEMIC AND INDUSTRIAL RESOURCES TO MEET SOLDIER NEEDS.
- COMMERCIALIZE DUAL USE TECHNOLOGY TO ACHIEVE PRODUCTION VOLUME THAT WILL MAKE AVAILABLE AFFORDABLE COMPONENTS FOR BOTH MILITARY AND INDUSTRIAL APPLICATIONS
- SERVE AS A NATIONAL CENTER FOR ELECTRONIC COMPONENTS RESEARCH WITH ON-SITE UNIVERSITY AND INDUSTRY PARTICIPATION.

**WE DON'T MAKE THE SYSTEMS...
WE MAKE THEM BETTER**

SPONSORED CONSORTIA/COOPERATIVES

SUBJECT

MEMBERS

- | | |
|---|---|
| • LOGISTICS R&D - COST REDUCTION | • AT&T, TRW, RTI, INTERMETRICS, IBM, HONEYWELL, GOULD |
| • METEOROLOGICAL DATA SYSTEM | • TRW, SAWTEK, TRACOR, BENDIX, VIZ |
| • SYSTEM DESIGN METHODOLOGY | • RTI, TELEDYNE BROWN, UVA, GTE, CSC, JERSEY CITY STATE COLLEGE |
| • THIN-FILM ELECTROLUMINESCENT COLOR DISPLAY | • PLANAR, SARNOFF, SUPERTEX, NORDEN, ELDEC |
| • ULTRAPURE QUARTZ CRYSTAL | • OK STATE U, LAWRENCE LIVERMORE LABORATORY, SAWYER RESEARCH |
| • PRECISION OSCILLATOR | • GE NEUTRON DEVICES, PIEZO TECH., INC. |
| • QUARTZ STUDIES | • PRINCETON U, RENSSELAER, MCI, RAYTHEON |
| • MULTIPLE LAUNCH ROCKET SYSTEM MILLIMETER WAVE TRANSCIEVER | • TRW, HUGHES, (MARTIN MARIETTA, DIEHL, THOMPSON CSF, THORN) |
| • DUAL MODE SEEKER | • CHANG INDUSTRIES, NORTHROP, MICOM RDEC |
| • SEARCH AND DESTROY ARMOR MILLIMETER WAVE TRANSCIEVER | • HONEYWELL, VARIAN, HUGHES, AEROJET, ALPHA, BALL AEROSPACE, TRW, FLAM & RUSSELL |
| • MILLIMETER WAVE IMAGING RADARS | • WTD, MICOM RDEC |
| • SATCOM-SINGLE CHANNEL OBJECTIVE TACTICAL TERMINAL TRANSMITTER | • STEINBRECHER, M-A/COM, HUGHES, FLAM & RUSSELL, GEE-LAB |
| • NOISE SOURCE FOR 94 GHZ | • NOISE COM, M-A/COM |
| • TANK DEFENSE RADAR | • TACOM, TRW, TI, BALL, MILLITECH, MICOM, WTD, HUGHES, GEORGIA TECH, PREDICTION SYSTEMS, CHANG INDUSTRIES |
| • PARTS EMULATION | • ITD, SYNOPSYS, QUICKTURN, SIGNETICS, GD |
| • HIGH PERFORMANCE DIGITAL TO ANALOG CONVERTER | • RADC |
| • VEHICLE SELF-PROTECTION | • WTD, MICOM RDEC, ARMAMENTS RDEC |
| • MIMIC HARDWARE DESCRIPTION LANGUAGE | • ESSOF, INTERMETRICS, PERII |



US ARMY
RESEARCH LABORATORY

WE HAVE AN OPEN LABORATORY



ARMY
MATERIEL COMMAND

- CENTER FOR RESEARCH & DEVELOPMENT
COOPERATION/COORDINATION
- ON-SITE GOVERNMENT LAB/UNIVERSITY/INDUSTRY TEAMS
- JOINT COOPERATIVE PROGRAMS WITH CONTRACTORS
- IMPORTER OF FOREIGN TECHNOLOGY
 - TECHNOLOGY EXCHANGE
 - ENGINEER/SCIENTIST EXCHANGE
- LABORATORY/INDUSTRY/GOVERNMENT CONSORTIA
- TECHNOLOGY REINVESTMENT PROGRAMS PARTNERSHIP

**SUCCESS IN THESE AREAS REQUIRES
STATE-OF-THE-ART CAPABILITIES/FACILITIES**

EXAMPLES OF UNIQUE EQUIPMENTS & CAPABILITIES AT ARL/FORT MONMOUTH

- MERCURY CADMIUM TELLURIUM MOLECULAR BEAM EPITAXY
- BARE CHIP INFRARED DETECTOR ARRAY MEASUREMENT FACILITY
- BAR BONDER FOR LASER DIODE ARRAYS
- FLAT PANEL DISPLAY DEPOSITION EQUIPMENT
- DISPLAY EVALUATION LABORATORY
- GLOW DISCHARGE MASS SPECTROMETER
- THERMAL DESORPTION MASS SPECTROMETER
- ULTRA HIGH VACUUM E-BEAM METAL DEPOSITION EQUIPMENT
- LATEST GENERATION (100 kV) ELECTRON BEAM PATTERN GENERATOR
- HIGH PRESSURE (0 - 50 KILOBAR) AND UNIAXIAL STRESS (20 KILOBAR) MAGNETIC FIELD (9 TESLA) SPECTROSCOPY
- MILLIMETER-WAVE QUASI-OPTICAL TEST FACILITIES
- AUTOMATED LARGE SCALE MICROWAVE & MILLIMETER LIFE TEST EQUIPMENT
- COMPUTER AIDED DIAGNOSTIC ELECTRON BEAM TESTING (CADET)
- AUTOMATED MULTI FUNCTION MICROWAVE/MILLIMETER NETWORK ANALYSIS
- 30 MVA INSTALLED POWER FACILITY WITH 10 MW THERMAL MANAGEMENT SYSTEM
- OPTICALLY ISOLATED PULSE POWER DATA ACQUISITION SYSTEM
- TWO 3.3 MVA SOLID STATE CIRCUIT BREAKERS FOR NON-DESTRUCTIVE TESTING



US ARMY
RESEARCH LABORATORY

SIGNIFICANT PATENT POSITIONS



ARMY
MATERIEL COMMAND

- MAGNETICS
- POWER SOURCES
- FERRITE DEVICES
- DISPLAYS
- CRYSTAL OSCILLATORS
- MILLIMETER WAVE PHOTONICS
- OPTICAL SWITCHES
- SURFACE ACOUSTIC WAVE DEVICES
- NANO-ELECTRONICS
- INFRARED DETECTOR



US ARMY
RESEARCH LABORATORY

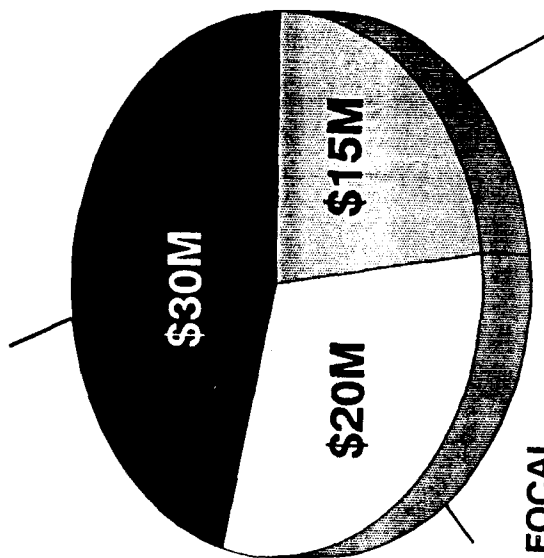
ELECTRONIC and POWER SOURCES FY94 PROGRAM



ARMY
MATERIEL COMMAND

ALL SOURCES

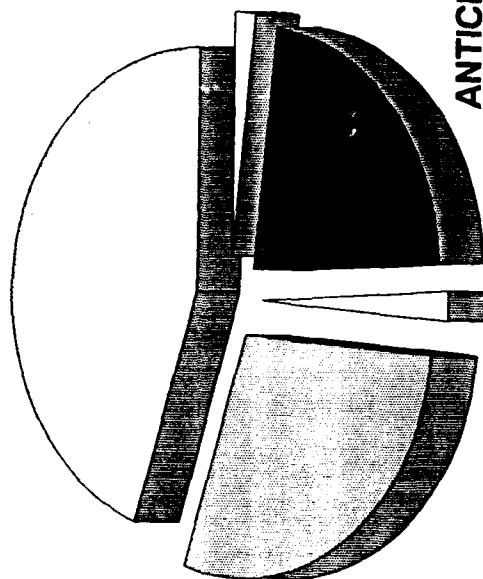
MIMIC



INFRARED FOCAL
PLANE ARRAY (IRFPA)

\$65.0M

6.2
\$19.3M



RAPID PROTOTYPING
OF APPLICATION
SPECIFIC SIGNAL
PROCESSORS (RASSP)

\$36.2M *

GRAND TOTAL \$101.2M

* Does Not Include COE/6.2 Power Plus-up

MAJOR TRI-SERVICE/ARPA-MANAGED PROGRAMS

	<u>TOTAL PROGRAM</u>	<u>ARMY FY94</u>	<u>FY95</u>
• MICROWAVE/MILLIMETER-WAVE MONOLITHIC INTEGRATED CIRCUITS (MIMIC)	\$600 M	\$30 M	\$20 M
• RAPID PROTOTYPING OF APPLICATION-SPECIFIC INTEGRATED CIRCUITS (RASSP)	\$147 M	\$13 M	\$15 M
• APPLICATION-SPECIFIC ELECTRONIC MODULES (ASEM)	\$58 M	\$8 M	
• HEAD-MOUNTED DISPLAYS (HMD)	\$12 M	\$2 M	
• HIGH-DEFINITION DISPLAYS PROGRAM	\$300 M	\$100 M *	
• HIGH-DENSITY MICROWAVE PACKAGING (HDMP)	\$35 M	\$3 M	\$3 M
• MICROWAVE ANALOG FRONT-END TECHNOLOGY (MAFET)	\$380 M		\$20 M

* INCLUDES MANUFACTURING

TECHNOLOGY INVESTMENTS

BUSINESS AREA	FY 94 - 99 MAJOR INVESTMENTS
NANO/OPTO/PHOTONIC DEVICES	<ul style="list-style-type: none"> • NANOSCALE ELECTRO/OPTOELECTRONIC TERAFLOP PROCESSING ELEMENTS FOR RADAR, MILLIMETER WAVE IMAGING, AND MULTICOLOR INFRARED IMAGING ARRAYS
OPTICAL DEVICES AND FOCAL PLANE ARRAYS	<ul style="list-style-type: none"> • LOW COST (CAMCORDER PRICES), LARGE-AREA COOLED AND UNCOOLED IR DETECTOR ARRAYS • MULTI-WAVELENGTH LASER SOURCES • SENSOR AND EYE LASER PROTECTION FOR GIGAHERTZ-TERAHERTZ
MICROWAVE/ MILLIMETER/ MIMIC DEVICES	<ul style="list-style-type: none"> • SOLID STATE AND TUBE TECHNOLOGY FOR TERAHERTZ SIGNAL INFORMATION TRANSMISSION, RECEPTION, AND SIGNAL PROCESSING FOR COMMUNICATIONS, SURVEILLANCE AND ELECTRONIC WARFARE
ADVANCED SENSOR/ ACTUATOR DEVICES	<ul style="list-style-type: none"> • MICROELECTROMECHANICAL BATTLEFIELD SENSORS -- MOLECULAR BIOSENSORS, ACOUSTIC AMPLIFIERS & MICROPHONES, RADIATION IMAGING DETECTORS, AND IMAGE GENERATORS • HIGH-POWER PHOTOCONDUCTIVE SWITCHES

TECHNOLOGY INVESTMENTS

BUSINESS AREA	FY 94 - 99 MAJOR INVESTMENTS
DESIGN, SIMULATION, MODELING, CONCURRENT ENGINEERING & PROTOTYPING	<ul style="list-style-type: none"> • VIRTUAL CORPORATION (VIRTUAL PROTOTYPING, FORMAL VERIFICATION AND FLEXIBLE MANUFACTURING) TO REDUCE TRANSITION FROM IDEA TO ON-THE-SHELF COMPONENTS FROM TWO YEARS TO THREE MONTHS • RAPID EXPLOITATION OF NEW TECHNOLOGY FOR LOGISTICS, PERFORMANCE AND COST UPGRADES • LOW-POWER ELECTRONIC (3-VOLT, ULTRAMINIATURE, ULTRA-DENSE) 3-D PACKAGING (GIGAFLOPS IN A CAN)
RELIABILITY AND MANUFACTURING SCIENCE	<ul style="list-style-type: none"> • DOCUMENTATION, TESTING AND VERIFICATION OF SUITABILITY OF "BEST COMMERCIAL PRACTICE" PARTS AT 1/10 OF CURRENT COST FOR MILITARY USE
ACOUSTO/FERRO-ELECTRONICS	<ul style="list-style-type: none"> • ULTRASTABLE, LOW-NOISE, VIBRATION-IMMUNE FREQUENCY SOURCES (SELF-CORRECTING CLOCKS) • ACOUSTIC WAVE DEVICES FOR SIGNAL PROCESSING SYSTEMS
DISPLAY DEVICES	<ul style="list-style-type: none"> • COMPONENTS FOR VIRTUAL ENVIRONMENT, TELEPRESENCE, TELEROBOTICS, THREE-DIMENSIONAL VISION AND SOUND, AND TOUCH.

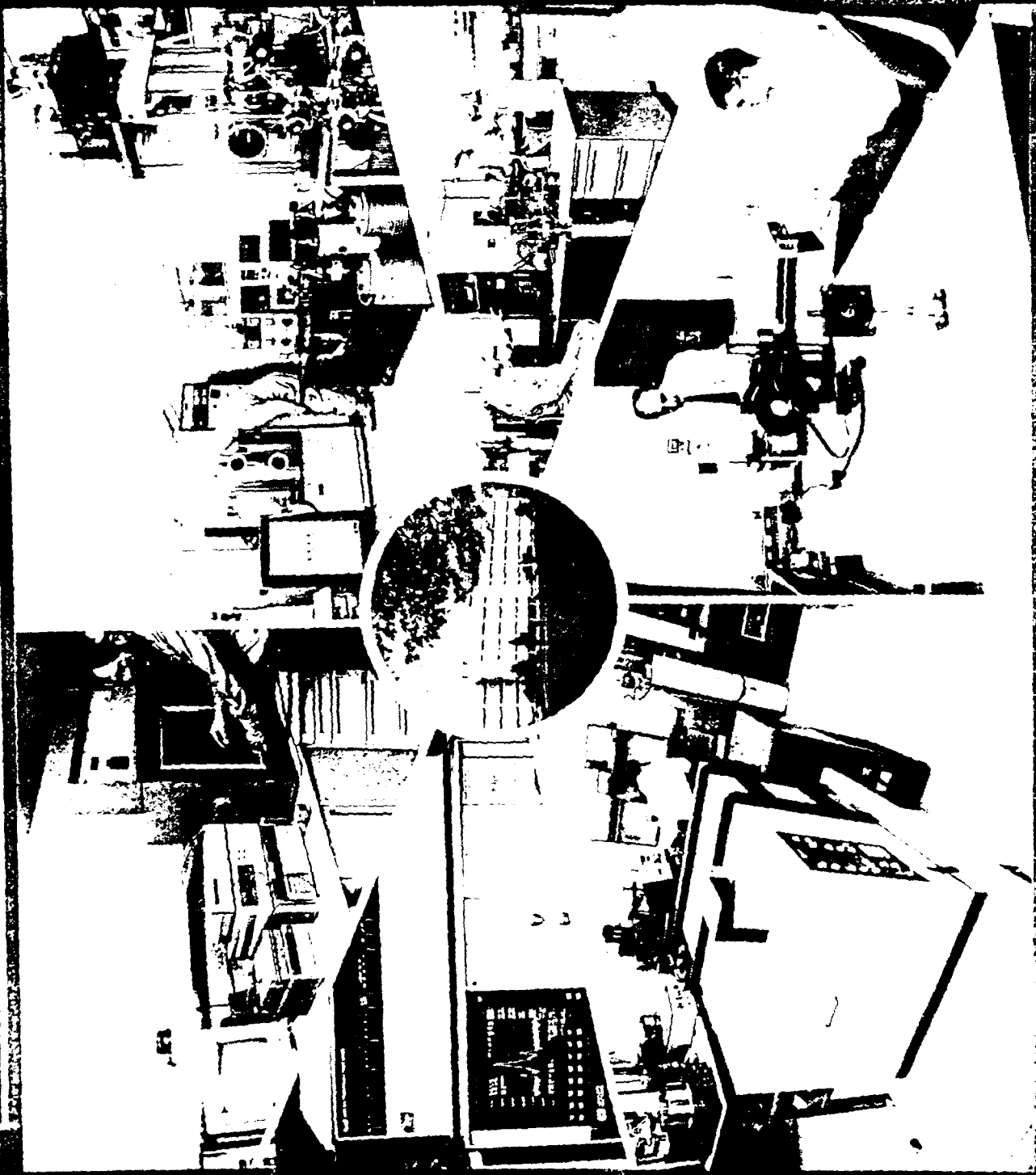
TECHNOLOGY INVESTMENTS

BUSINESS AREA	FY 94 - 99 MAJOR INVESTMENTS
POWER SOURCES (INCL. PULSE POWER)	<ul style="list-style-type: none">• ELECTROCHEMICAL TECHNOLOGY FOR INEXPENSIVE, HIGH-ENERGY BATTERIES TO REDUCE LOGISTICS BURDEN AND COSTS• HIGH-POWER, LIGHTWEIGHT FUEL CELLS FOR ADVANCED SOLDIER SYSTEMS• HIGH-POWER PULSER COMPONENTS AND PULSER MODULES• POWER CONDITIONING FOR ELECTRIC VEHICLES

TRI-SERVICE COLLOCATION CENTER DISPLAYS

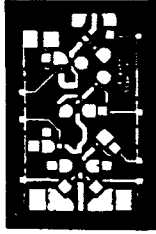


TRI-SERVICE COLLOCATION CENTER FREQUENCY CONTROL & DEVICES

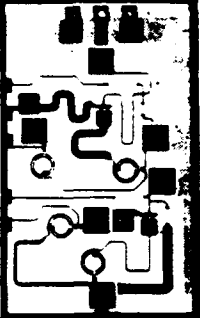
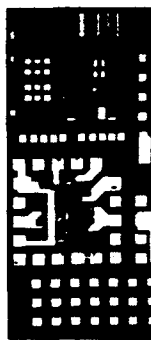


MIMIC

GOAL: DEVELOP U.S. CAPABILITY TO PRODUCE AT AFFORDABLE PRICE MICROWAVE WAVE MONOLITHIC INTEGRATED CIRCUITS (E.G. RADAR ON A SINGLE CHIP) FOR SMART MUNITIONS, ELECTRONIC WARFARE, RADAR AND COMMUNICATIONS SYSTEMS



MIMIC CHIPS



MIMIC PHASE II TEAM:

TRW, HONEYWELL, GD, HITTITE

MIMIC PHASE II TEAM:

TRW, WESTINGHOUSE, ALLIANT, GD

SYSTEMS IMPACT:

- * MLRS/TGW (1, 2)
- * SADARM (1, 2)
- * PATRIOT (1)
- * AAAM (1, 2)
- * LONGBOW (1)
- * XROD (1, 2)
- * SWF STACOM (1)
- * CLASSIFIED (1)

ITT/MARTIN MARIETTA
ALPHA, HARRIS

GEORGE
BY MAGNOLIA

MACRO
BY MAGNOLIA

RAY/TI, AEROCJET,
SANDERS, GD, AIRTRON

- * STAFF (1)
- * ASPJ (1)
- * AN/ALQ-56-VE (1)
- * LH-NEWS (1)
- * GEN-X (1)
- * EW ACTIVE (1)
- * ARRAY (1)
- * GPS (1)
- * CLASSIFIED (1)

- * AAR (2)
- * SHARE (2)
- * APERTURE (2)
- * ATT (2)
- * DRAWING (2)
- * GBR (2)
- * GBT (2)
- * EHF (2)
- * DATALINK (2)

- * ATF-EW (2)
- * ARF RADAR (1)
- * AAED (2)
- * ATSR (1)
- * MRSR (1)
- * FIREFINDER (1)
- * SCAMP (2)

	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94
\$10 M	\$49 M	\$63 M	\$81 M	\$86 M	\$90 M	\$94 M	\$98 M	\$98 M

ARMY APPLICATION

9/16/91

RASSP

**RAPID PROTOTYPING OF APPLICATION
SPECIFIC SIGNAL PROCESSORS**

GOAL:

REINVENT THE PROCESS BY WHICH
EMBEDDED DIGITAL SIGNAL PROCESSORS ARE
DESIGNED, MANUFACTURED, UPGRADED, AND
SUPPORTED.

PROGRAM FEATURES:

- ENTERPRISE SYSTEM • CONCURRENT SIMULATION
- VIRTUAL PROTOTYPING • CONTINUOUS UPGRADE • BUILT-IN DIAGNOSTICS/PROGNOSTICS • MODEL YEARS

PRIMARY DEVELOPMENT CONTRACTORS:

MARTIN MARIETTA SUBCONTRACTORS

Ascent Logic Corp.
Aspect Development Inc.
AT&T
Berkeley Design Technology
Carnegie Mellon Univ.
CAD Framework Init.
COMDISCO Systems
Honeywell
Intergraph
JRS Research Labs
Logic Modeling Corp.
Management Sciences Inc.
MCC
Mentor Graphics

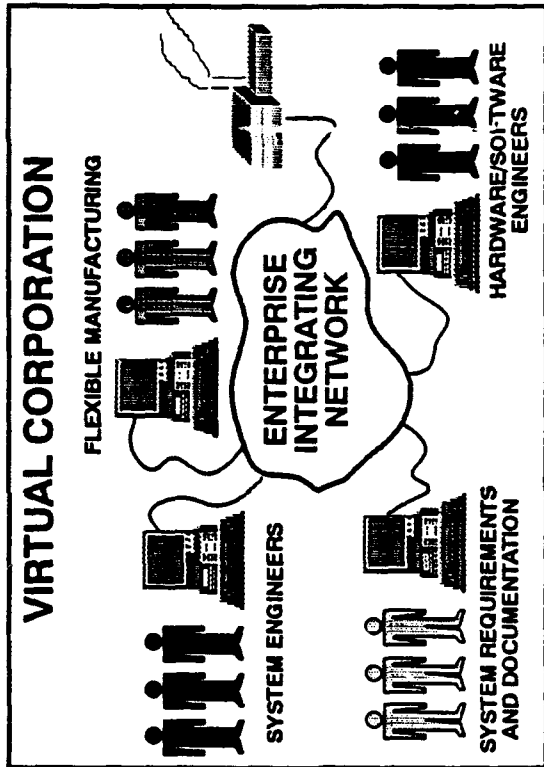
Omniview
Quickturn Systems
Rockwell International
S. Carolina Res. Auth.
Synopsis
TRW
Univ of Oregon
View logic Systems Inc.
Vista Technology Inc.

LOCKHEED SANDERS SUBCONTRACTORS

Motorola
Hughes
LMSC
ISX

TECHNOLOGY BASE CONTRACTORS:

- CAD Framework Init.
- Carnegie Mellon Univ.
- MIT
- Research Triangle Inst.
- Univ. of Cal., Berkeley
- Univ. of Cal., Davis
- Univ. of Cincinnati
- Univ. of Minnesota
- Univ. of Virginia



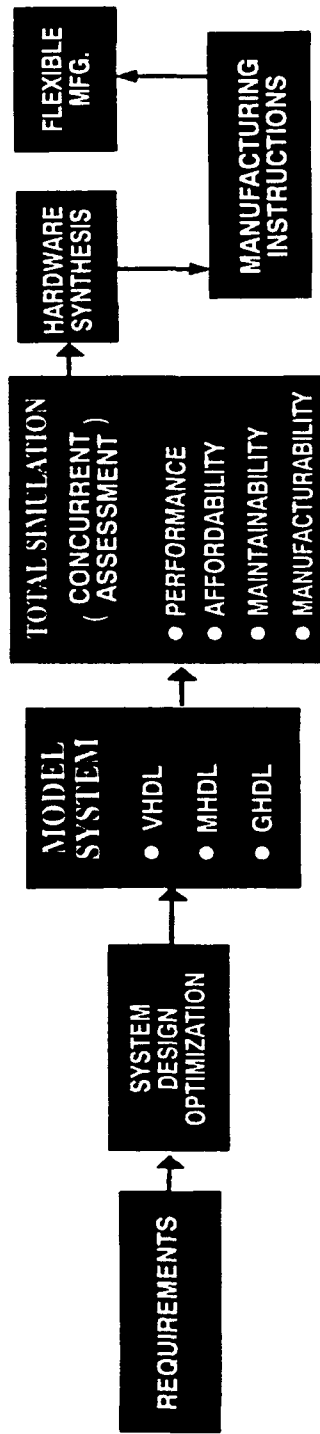
BENCHMARK TEAM:

- MIT LINCOLN LAB

FUNDING	FY92	FY93	FY94	FY95	FY96	TOTAL
	\$0.6M	\$22.3M	\$37.6M	\$46.1M	\$46.1M	\$152.7M

TOTAL LIFE-CYCLE DESIGN

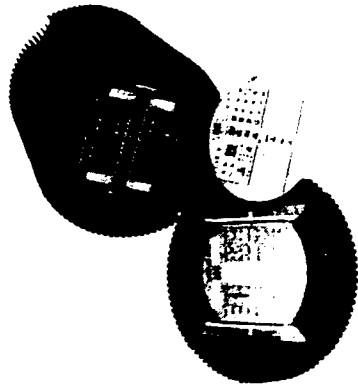
RASSP



DESIGN/SIMULATION, MODELING,
CONCURRENT ENGINEERING



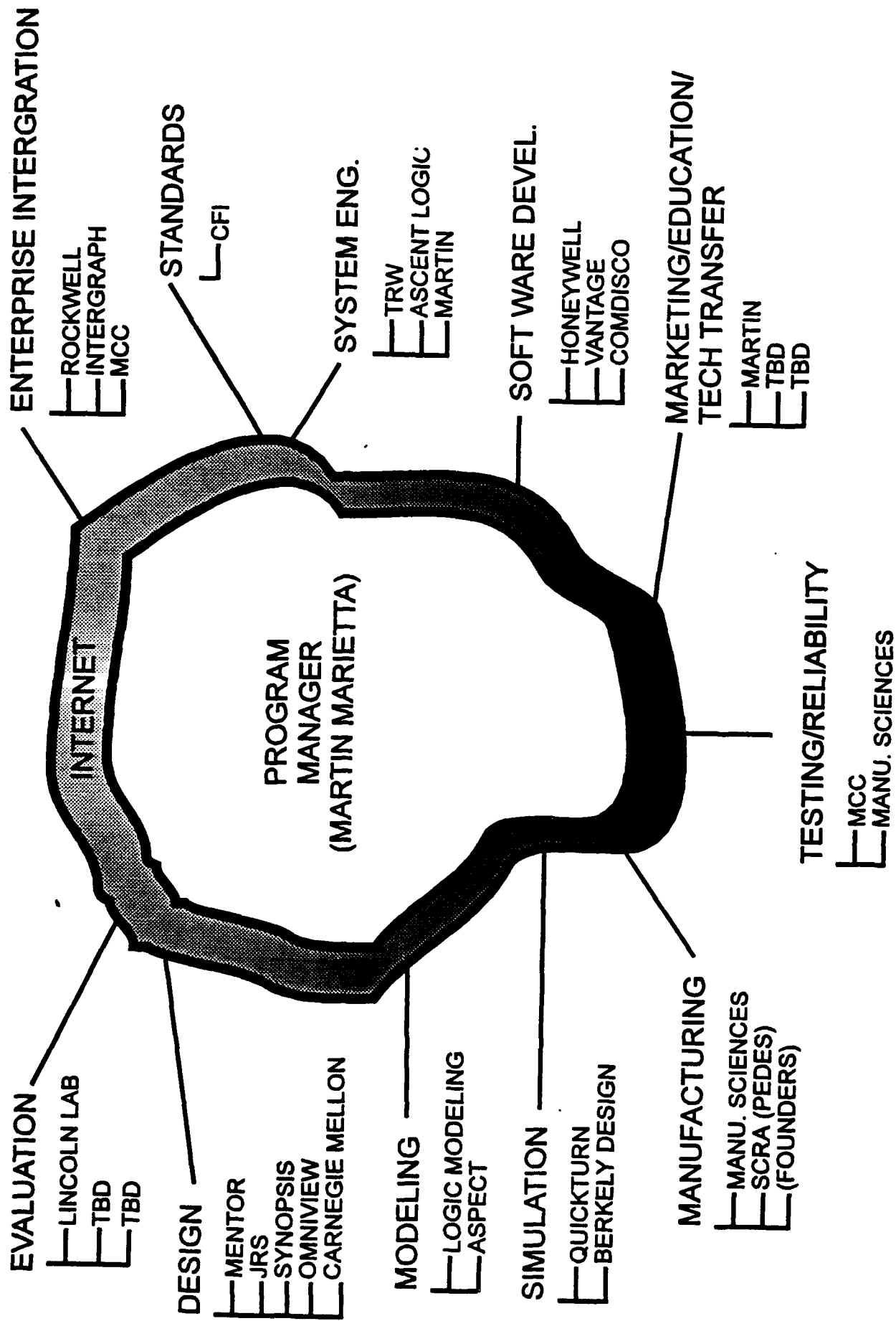
PACKAGING



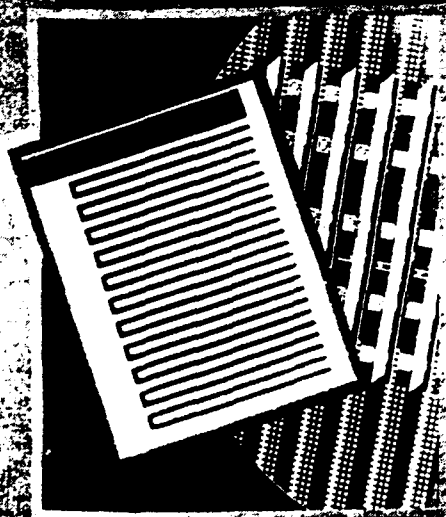
FLEXIBLE MANUFACTURING



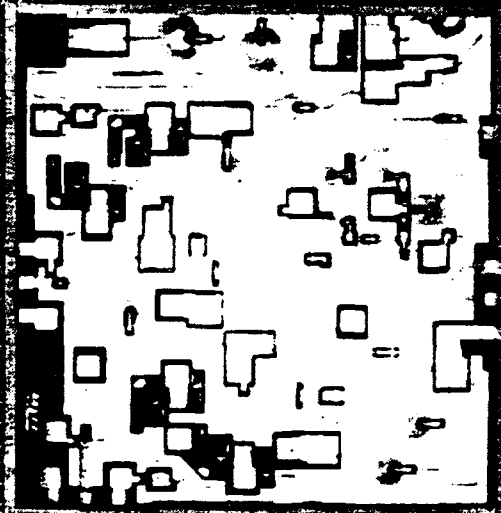
LEVERAGING



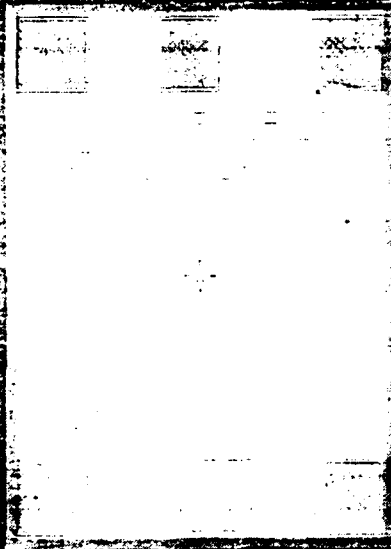
MICROFABRICATION TECHNOLOGY CREATES A NEW WORLD OF DEVICES AND COMPONENTS



**FREQUENCY
CONTROL**



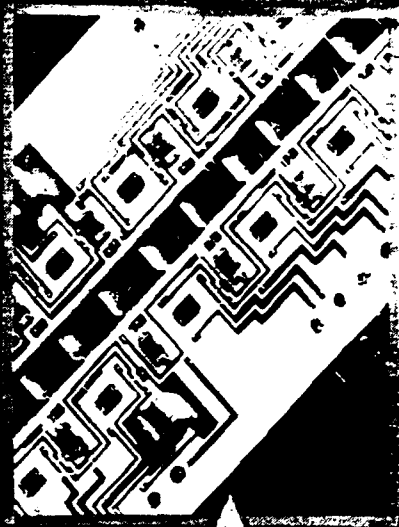
**MICROWAVE
ICs**



**POLYSILICON
MICROMOTOR**



DISPLAYS



**IR DETECTOR
ARRAYS**

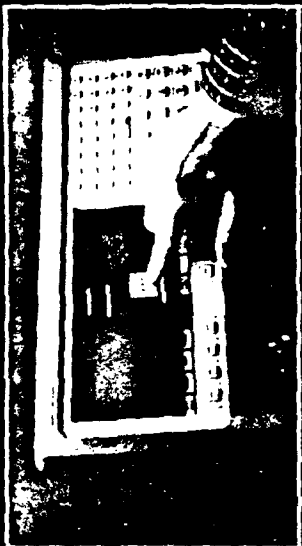


COMMERCIAL APPLICATIONS

MAGNETIC RESONANCE IMAGING



INFORMATION TERMINALS



HIGH DEFINITION TELEVISION

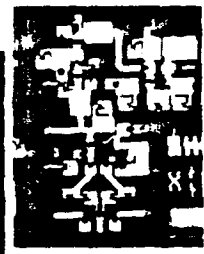


HIGH ENERGY BATTERIES



AUTOMOTIVE

COLLISION
AVOIDANCE



NAVIGATION



KEY-LESS ENTRY



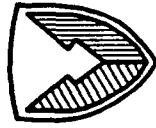
DIRECT BROADCAST
SATELLITE TV





US ARMY
RESEARCH LABORATORY

TRANSITION OF DUAL-USE TECHNOLOGY



ARMY
MATERIEL COMMAND

- FLAT PANEL DISPLAYS - PORTABLE COMPUTING, CELLULAR COMMUNICATIONS
- LARGE SCREEN DISPLAYS - WORKSTATIONS, MEDICAL IMAGING
- HEAD MOUNTED DISPLAYS - VIRTUAL REALITY, MEDICAL APPLICATIONS
- STEREO SCOPIC DISPLAYS - VIRTUAL REALITY, THREE-DIMENSIONAL COMPUTER AIDED DESIGN
- MICROWAVE/MILLIMETER WAVE DEVICES (MIMIC) - OBSTACLE AVOIDANCE RADAR FOR AUTOS, LOW-COST RECEIVERS FOR DIRECT BROADCAST SATELLITE, GLOBAL TELECOMMUNICATIONS SYSTEMS (IRIDIUM), WIRELESS LOCAL AREA NETWORKS, AUTOMATED LANDING SYSTEMS FOR ADVERSE WEATHER
- MICROWAVE TUBES - FEDERAL AVIATION AGENCY RADARS, PLEASURE BOAT RADARS, MICROWAVE OVENS
- INTEGRATED MICROSYSTEMS - PERSONAL COMMUNICATIONS, ENVIRONMENTAL TECHNOLOGY
- NANOSCALE ELECTRONIC/OPTOELECTRONIC DEVICES - ALL WEATHER VISION, IMAGE RECOGNITION, PERSONAL GLOBAL COMMUNICATIONS, OPTICAL INTERCONNECTS
- ELECTRONIC MATERIALS - LOW COST PHASED ARRAY ANTENNAS FOR CIVILIAN APPLICATIONS, OPTICAL DATA STORAGE, COLOR DISPLAYS, MEDICAL IMAGING

TRANSITION OF DUAL-USE TECHNOLOGY

- **ACOUSTO/FERROELECTRONIC DEVICES - FREQUENCY SOURCES FOR PERSONAL COMMUNICATIONS DEVICES, ENVIRONMENTAL SENSORS, REMOTE TAGGING, BANDPASS FILTERS FOR TV, OSCILLATORS FOR PC**
- **PULSE POWER - MAGNETIC LEVITATION APPLICATIONS, ROBOTICS, ROCK FRACTURING**
- **MICROCOMPUTER COMPENSATED CRYSTAL OSCILLATOR FOR COMMUNICATIONS APPLICATIONS**
- **BATTERIES - RECORDERS, CAMCORDERS, CELLULAR PHONE, PERSONAL DIGITAL ASSISTANTS**
- **ADVANCED CATHODE MATERIALS (COBALT OXIDE, VANADIUM PENTOXIDE) - BUTTON CELLS, CAMERAS, CALCULATORS, HEARING AIDS**
- **HIGH ENERGY MAGNETIC MATERIALS - RADARS COMPUTERIZED TOMOGRAPHY (MRI)**
- **SAW DEVICE TECHNOLOGY - BIOSENSORS, WIRELESS COMMUNICATIONS**
- **MAGNETIC SEPARATORS - MINING & ENVIRONMENTAL RECLAMATION**
- **FERRITE DEVICES - TV SIGNAL TRANSMISSION DISTRIBUTION SYSTEMS (CABLE-FREE), RADAR PHASE SHIFTERS**
- **HIGH ENERGY DENSITY CAPACITORS-IMPLANTABLE DEFIBRILLATORS**

COMMERCIALIZATION INITIATIVES/DIALOGUE AS A RESULT OF MARKETING EFFORTS

PARTICIPANTS

INTERCON RESEARCH ASSOCIATES

CATERPILLAR TRACTOR CORP.

ELECTRONIC CONCEPTS CORP.

MARTIN MARIETTA

VARIAN

MEDICAL COLLEGE OF WISCONSIN

VOLTICS CORPORATION

CARDIAC PACEMAKERS INC.

ABTECH

BUREAU OF MINES

AMC CORPORATION

ABBOTT LABORATORIES

PRINCETON MICROWAVE TECHNOLOGY

TECHTROL CYCLONETICS

TECHNOLOGY COMMERCIALIZATION INITIATIVES

RECHARGEABLE LITHIUM BATTERIES

MAGNETIC ACTUATORS

HIGH ENERGY DENSITY CAPACITORS

MAGNETIC TECHNOLOGY FOR MICROWAVE TUBES

MAGNETIC TECHNOLOGY FOR MICROWAVE TUBES

MAGNETIC TECHNOLOGY FOR MRI SYSTEMS

CAPACITORS

**CAPACITORS FOR CARDIAC DEFIBRILLATORS
(IMPLANTABLE)**

BIOSENSORS

MAGNETIC TECHNOLOGY FOR ORE SEPARATION

MAGNETIC TECHNOLOGY FOR ORE SEPARATION

**MAGNETIC TECHNOLOGY FOR BIOTECHNOLOGY
APPLICATIONS**

**MICROWAVE/MILLIMETERWAVE WAVE FERRITE
DEVICES**

DIELECTRIC-RESONATOR OSCILLATORS

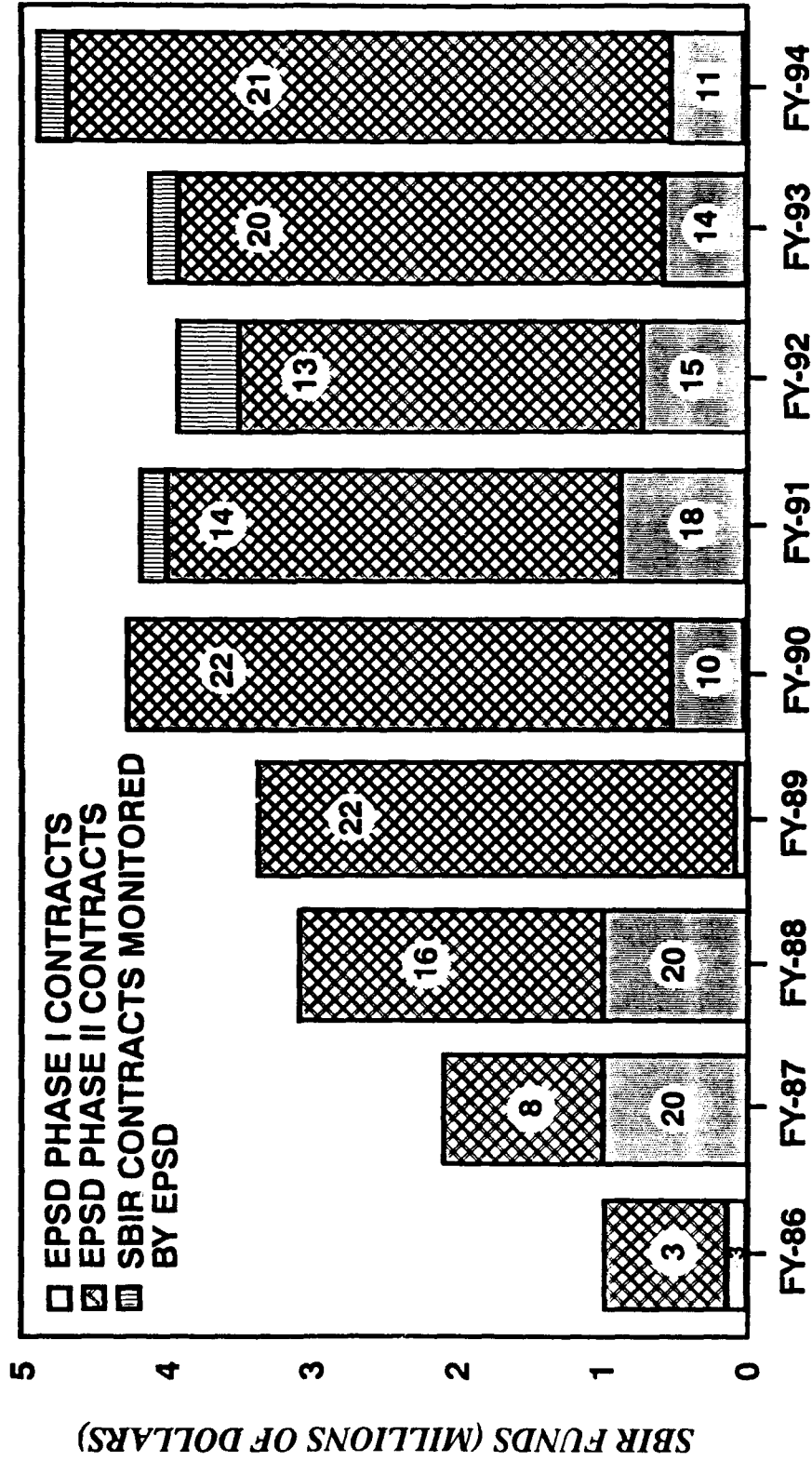


US ARMY
RESEARCH LABORATORY

ELECTRONICS AND POWER SOURCES DIRECTORATE SBIR FUNDING



ARMY
MATERIEL COMMAND



COOPERATIVE R&D AGREEMENTS (CRDAs) IN EFFECT

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - TRONTECH	New & improved high frequency oscillators & amplifiers
EPSD - MARTIN MARIETTA CORPORATION	Magnetic biasing system for microwave tubes
EPSD - CECOM, BELLCORE	Epitaxial lift-off procedures for fiber optic applications
EPSD - NORDEN	Development of portable flat panel display workstation
EPSD - R.F. MONOLITHICS, INC.	Piezoelectric materials for frequency control & signal processing systems
EPSD - ADVANCED LITHOGRAPHY GROUP	Ion projection lithography for semiconductor fabrication
EPSD - ALPHA INDUSTRIES	Semiconductor diodes & detectors based on planar doped barrier (PDB) structures
EPSD - ELECTRONIC CONCEPTS, INC.	High energy density capacitor technology
EPSD - SHIPLEY CORPORATION	Development of advanced E-beam resists for fine geometry electronic devices
EPSD - POWER CONVERSION, INC.	Development of a battery fuel gauge
EPSD - R & R, INC.	Magnet designs for MRI systems
EPSD - ADVANCED MATERIAL CORP.	Magnetic material separation technology
EPSD - HAMPTON UNIV.-POLYTECHNIC UNIV.	Photoconductive impulse sources and transmitters
EPSD - DREXEL UNIVERSITY	Microwave & Photonic Devices & Circuits

COOPERATIVE R&D AGREEMENTS (CRDAs) IN EFFECT

(CONTINUATION)

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - FORSYTH ELECTRO-OPTICS	Thin film electroluminescent ultraviolet emitter
EPSD - PRINCETON SCIENTIFIC INSTRUMENTS	Magnetic focusing assembly for XUV imaging
EPSD - CECOM-CERAMOPTEC, INC.	Fiber optic technology
EPSD - UVOCs	UV/ozone cleaning process for electronic circuits & devices
EPSD - CECOM- RUTGERS UNIVERSITY	Ultra-high speed and mm wave electronic devices including surface/interface studies
EPSD - RUTGERS UNIVERSITY	Ferroelectrics and high temperature superconducting thin films for MM wave & signal processing devices
EPSD - RUTGERS UNIVERSITY	Hermetic coatings for optical waveguides
EPSD - RUTGERS UNIVERSITY	Smart ceramic materials (piezoceramic) for advanced sensing & actuating functions
EPSD - CECOM-PRINCETON UNIVERSITY	Photonic and optoelectronic devices for optical networks
EPSD - STEVENS INSTITUTE OF TECHNOLOGY	High frequency external modulators for optoelectronic and microwave device applications
EPSD - N.J. INSTITUTE OF TECHNOLOGY	Ultra-high speed MM wave/microwave electronic/photonics device development
EPSD - TECHTROL CYCLONETICS, INC.	Low noise dielectric resonator oscillators as high performance microwave sources
EPSD - NATIONAL INFORMATION DISPLAY LABORATORY	Development of phosphor display technology and display evaluation procedures

COOPERATIVE R&D AGREEMENTS (CRDAs) IN EFFECT (CONTINUATION)

PARTICIPANTS

AREA OF TECHNOLOGY TRANSFER

EPSD - KEAN COLLEGE	Advance the development of nanoelectronic devices such as electron waveguides and coulomb blockade devices
EPSD - COLORADO SCHOOL OF MINES	R&D on high power systems, including power storage and switching elements, distribution components, etc.
EPSD - Q-TECH CORPORATION	Microcomputer compensated crystal oscillator
EPSD - ASSOCIATION OF ACADEMIC HEALTH CENTERS	Bio-Electronic solutions to medical problems
EPSD - MMTC CORP.	Microwave devices and circuits
EPSD - SAWTEK	Low vibration sensitivity resonators and oscillators
EPSD - MICROELECTRONICS CENTER OF NORTH CAROLINA	Plasma assisted dry soldering procedures and equipment
EPSD - HARRIS CORPORATION	Sequential electrochemical reduction analysis technique for measuring solderability of electronic components
EPSD - MOTOROLA, INC.	Sequential electrochemical reduction analysis technique for measuring solderability of electronic components
EPSD - RAYNET CORPORATION	Surface oxide evaluation system
EPSD - UNIVERSITY OF MARYLAND	Computerized design models for solder behavior as a function of microstructure
EPSD - UNIVERSITY OF MARYLAND	Mossbauer spectroscopy as a process control tool for composite solders
EPSD - WASHINGTON UNIVERSITY	Development of composite solders

COOPERATIVE R&D AGREEMENTS (CRDAs) IN EFFECT (CONTINUATION)

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - DELCO ELECTRONICS	Sequential electrochemical reduction analysis procedures and equipment in a production environment
EPSD - TEXAS INSTRUMENTS	Sequential electrochemical reduction analysis procedures and equipment in a production environment
EPSD - JOHNS HOPKINS UNIVERSITY	Monitoring and control of printed circuit board plating thickness
EPSD - VHG LABS, INC.	Directly coupled Zeeman Atomic Absorption Spectroscopic Analysis Technique for semiconductor materials
EPSD - LAMBDA NOVATRONICS	Fluxless soldering/joining techniques
EPSD - MARTIN MARIETTA TECHNOLOGIES, INC.	Fluxless soldering/joining techniques
EPSD - HERCULES DEFENSE ELECTRONICS	Fluxless soldering/joining techniques



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PATENT LICENSING INITIATIVES



ARMY
MATERIEL COMMAND

PATENT

MOTOROLA	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
Q-TECH	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
FREQ.ELECTRONICS	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
BALL EFRATOM	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
VECTRON	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
PIEZO CRYSTAL	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
PIEZO TECHNOLOGY	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
ALPHA INDUSTRIES	PLANAR DOPED BARRIER DIODE	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
HEWLETT PACKARD	PLANAR DOPED BARRIER DIODE	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
UNDER NEGOTIATIONS	HIGH ENERGY DENSITY CAPACITOR TECHNOLOGY	EXCLUSIVE/PARTIALLY EXCLUSIVE
MARTIN MARIETTA	MICROWAVE TUBE TECHNOLOGY	NON-EXCLUSIVE (SIGNED AND IN EFFECT)
TECHTROL CYCLONETICS	DIELECTRIC RESONATOR OSCILLATOR TECHNOLOGY	NON-EXCLUSIVE (SIGNED AND IN EFFECT)
PRINCETON MICROWAVE TECHNOLGY	MICROWAVE/MM WAVE DROP-IN CIRCULATOR	NON-EXCLUSIVE(SIGNED) (Being commercialized under the SBIR program)
PRINCETON MICROWAVE TECHNOLGY	MICROWAVE/MM WAVE DROP-IN SWITCH	NON-EXCLUSIVE(SIGNED)
PRINCETON MICROWAVE TECHNOLGY	DIELECTRIC RESONATOR OSCILLATOR TECHNOLOGY	NON-EXCLUSIVE(SIGNED)
PRINCETON MICROWAVE TECHNOLGY	MICROSTRIP RESONANCE ISOLATOR	NON-EXCLUSIVE(SIGNED)



US ARMY
RESEARCH LABORATORY

PATENT LICENSING INITIATIVES (CONTINUED)



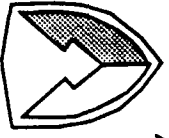
ARMY
MATERIEL COMMAND

LICENSEE	PATENT	TYPE OF LICENSE
ELECTRONICS CONCEPTS	HIGH ENERGY DENSITY CAPACITOR TECHNOLOGY	EXCLUSIVE (BEING SIGNED) (BORN OUT OF A CRDA)
AMC CORP	MAGNETIC SEPARATOR TECHNOLOGY	TO BE DETERMINED
UNDER NEGOTIATIONS	MAGNETIC TECHNOLOGY FOR MRI	EXCLUSIVE/PARTIALLY EXCLUSIVE
POWER CONVERSION	BATTERY FUEL GUAGE	EXCLUSIVE (BEING SIGNED) (BORN OUT OF A CRDA)

EPSD HAS ALREADY RECEIVED \$66K IN PATENT LICENSING FEES



US ARMY
RESEARCH LABORATORY



ARMY
MATERIEL COMMAND

WE ARE A PART OF YOUR FUTURE AND
YOU ARE A PART OF OUR FUTURE

NOTES

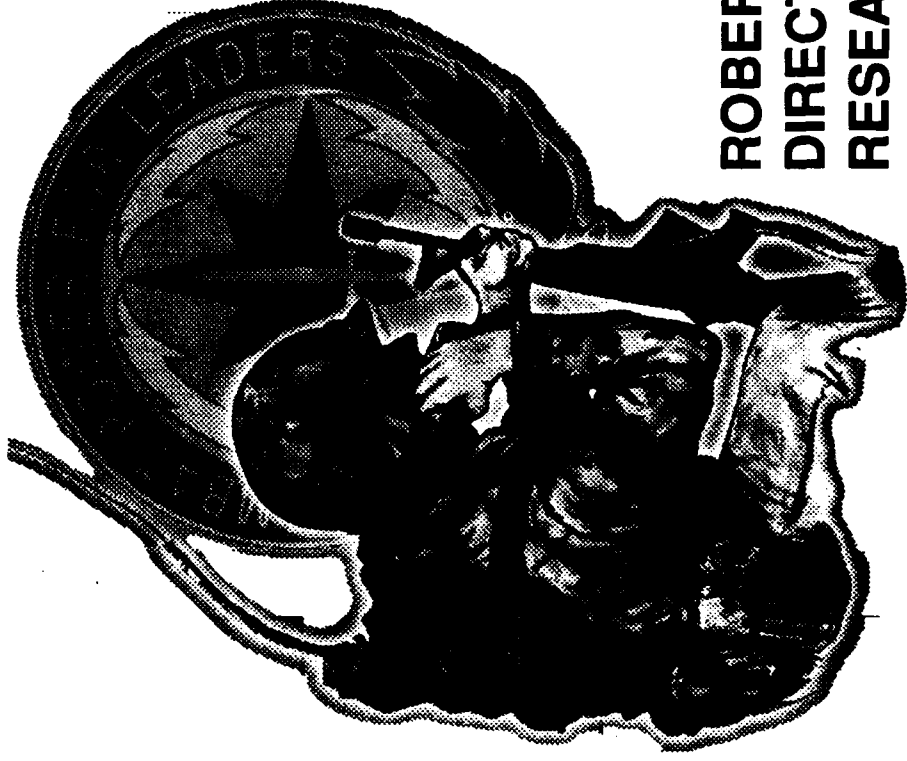
SESSION III

"DISRUPT AND DENY"

MODERATOR

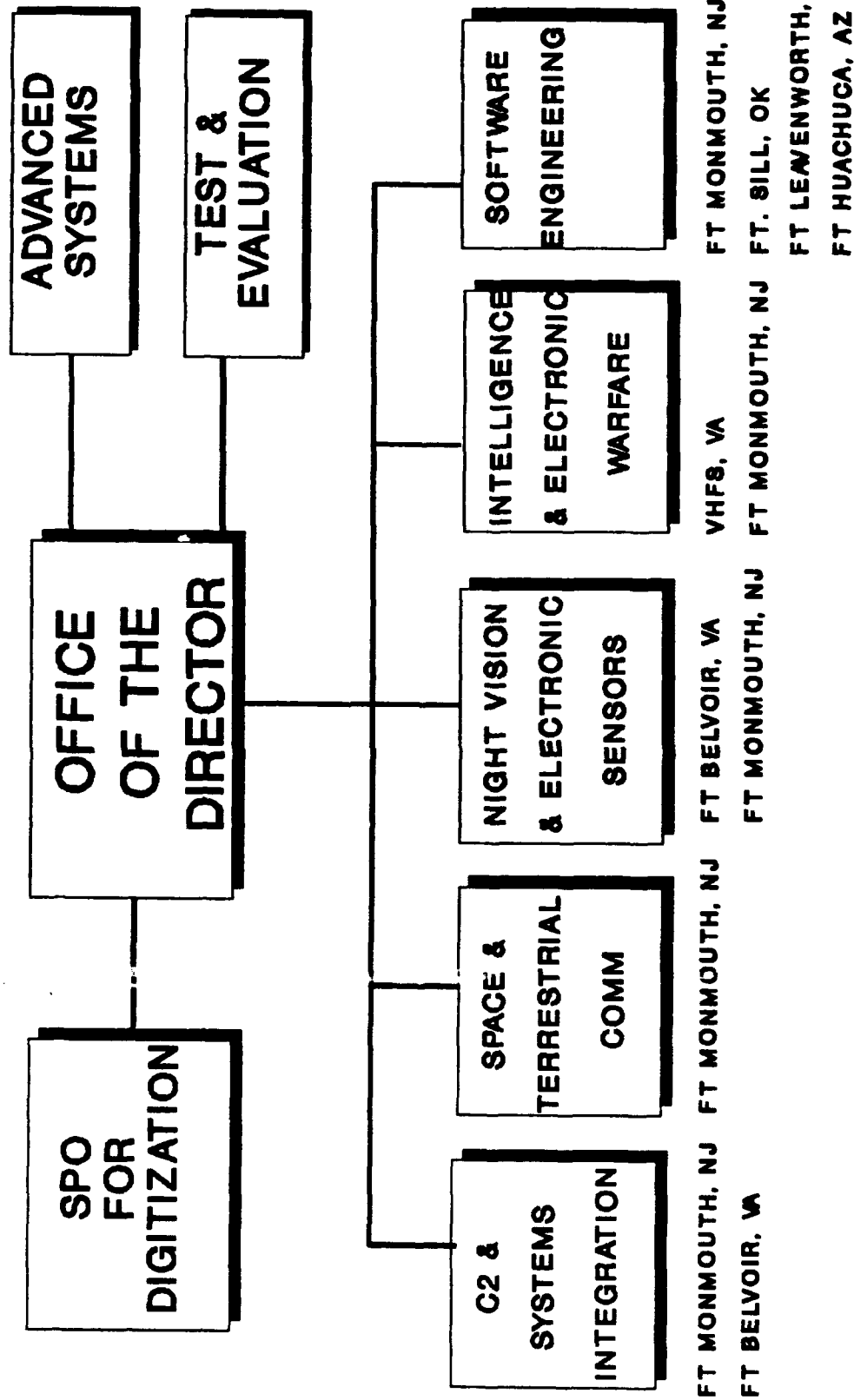
MR. ROBERT F. GIORDANO
DIRECTOR
RESEARCH, DEVELOPMENT, AND
ENGINEERING CENTER
CECOM

OWNING THE SPECTRUM KEY TO WINNING THE INFORMATION WAR

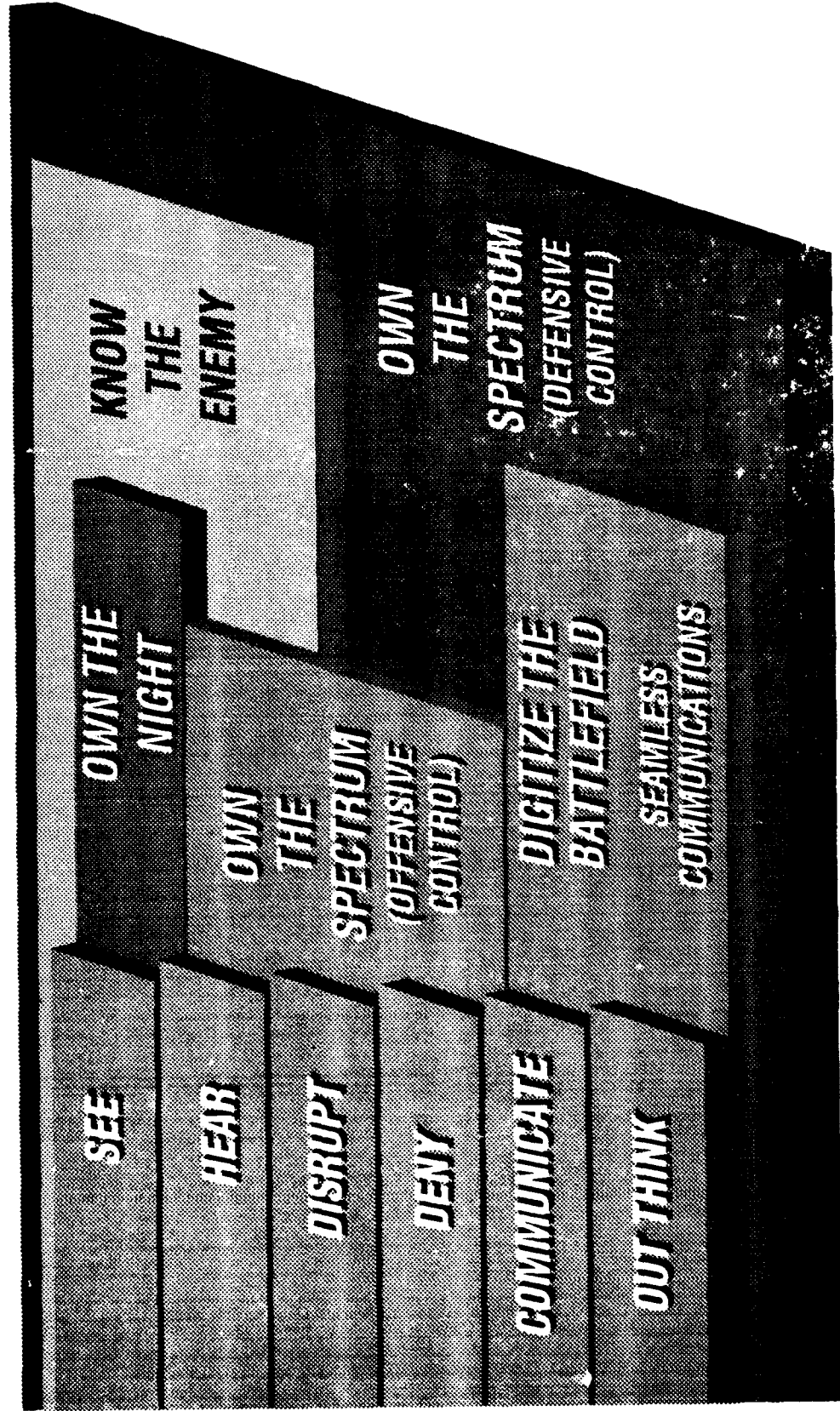


**ROBERT F. GIORDANO
DIRECTOR, CECOM
RESEARCH, DEVELOPMENT &
ENGINEERING CENTER**

CECOM RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

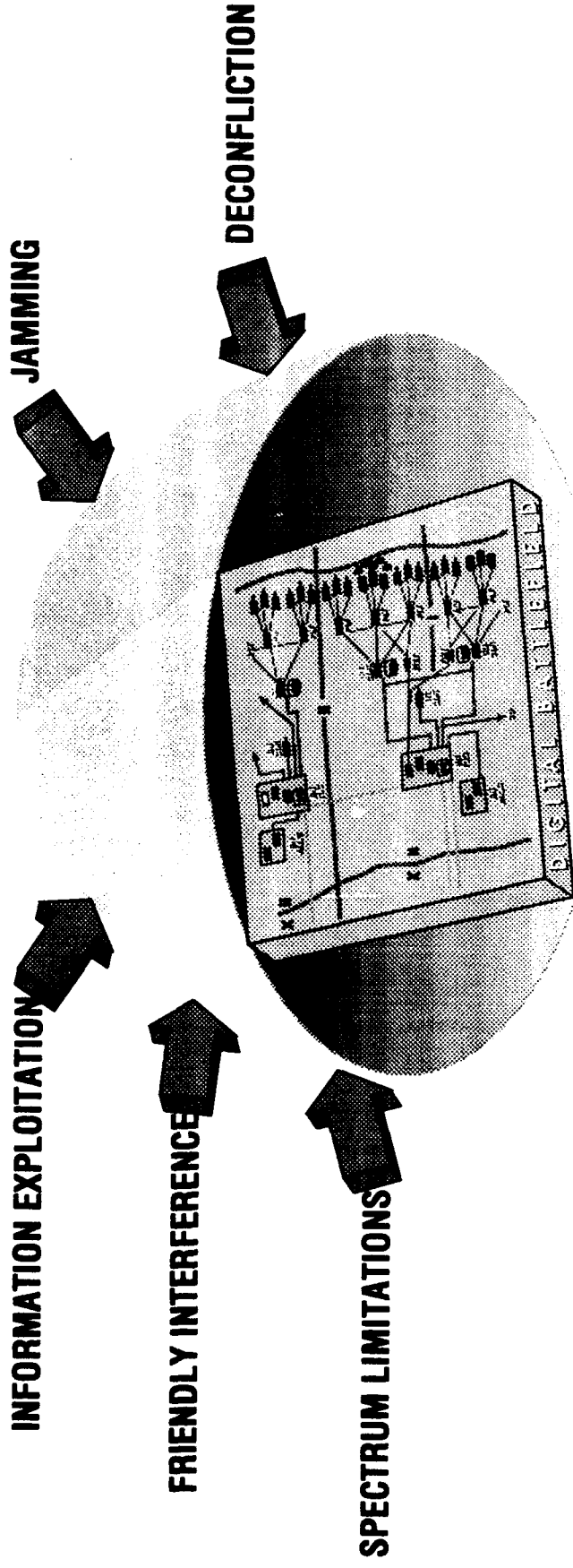


INFORMATION WAR - FUNCTIONS



OWNING THE ELECTROMAGNETIC SPECTRUM

- *DEFENSIVE CONTROL - Protect and Manage the Use of the Spectrum*
 - Ready Access to the Spectrum When We Want
 - Jam Resistant Communications
 - Information Security
 - Spectrum Planning and Management

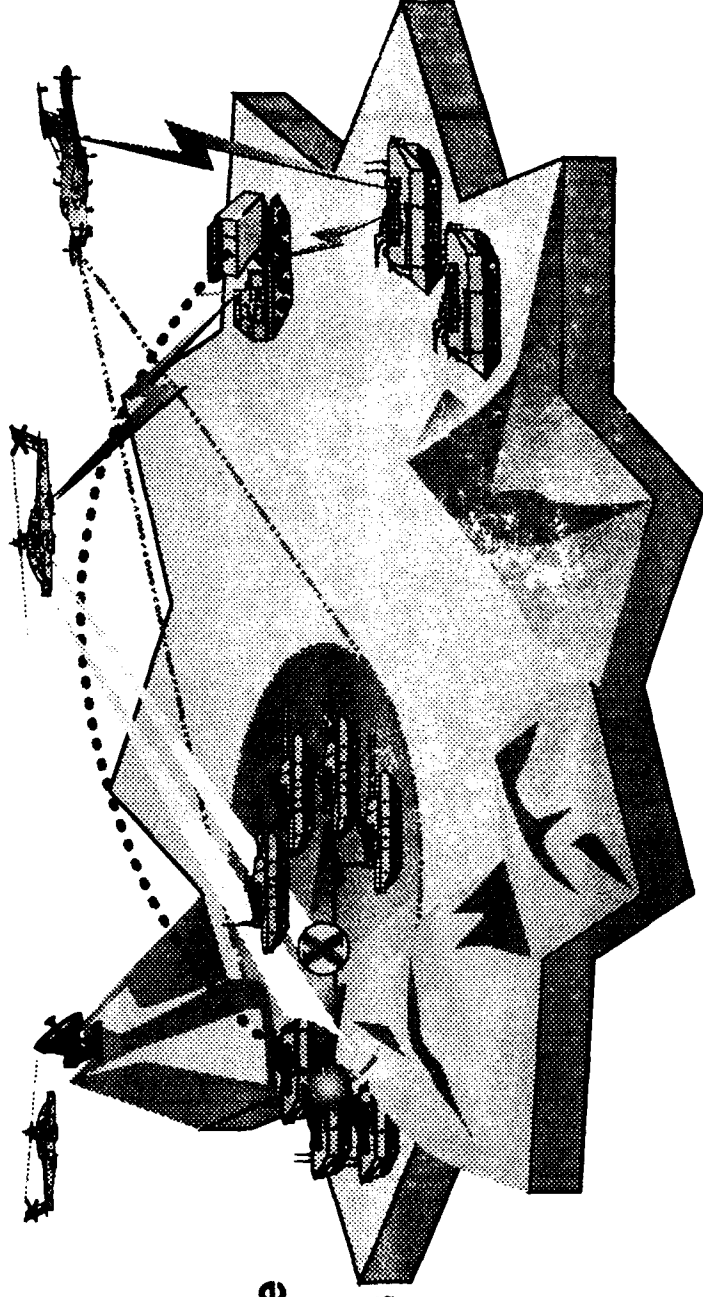


**REAL TIME MANAGEMENT AND CONTROL
OF THE ELECTROMAGNETIC SPECTRUM**

OWNING THE ELECTROMAGNETIC SPECTRUM

OFFENSIVE CONTROL - Exploit The Enemy's Use Of The Spectrum

- Exploit Enemy Emissions to Determine Location and Order of Battle
- Utilize Electronic Attack to Deny Timely Command and Control
- Identify and Locate Command Posts as Priority Targets for Physical Destruction



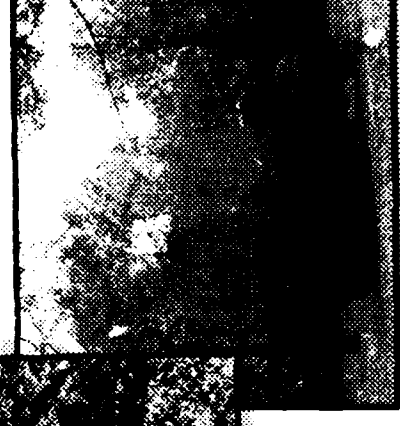
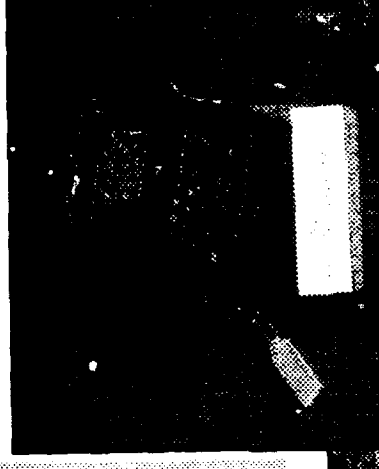
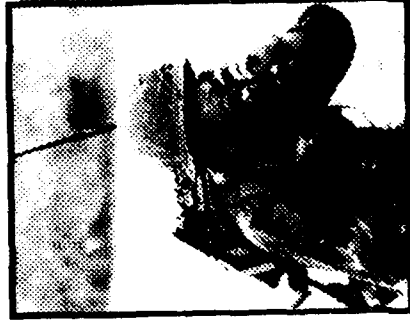
**DECAPITATE THE ENEMY'S COMMAND STRUCTURE
FROM ITS BODY OF COMBAT FORCES**

OWN THE SPECTRUM

- **USE** the full potential of the spectrum to achieve decisive victory
- **PROTECT** friendly use of the spectrum
- **EXPLOIT** enemy use of the spectrum
- **DENY** enemy use of selected parts of the spectrum
- **MANAGE** the spectrum to ensure our victory on the battlefield

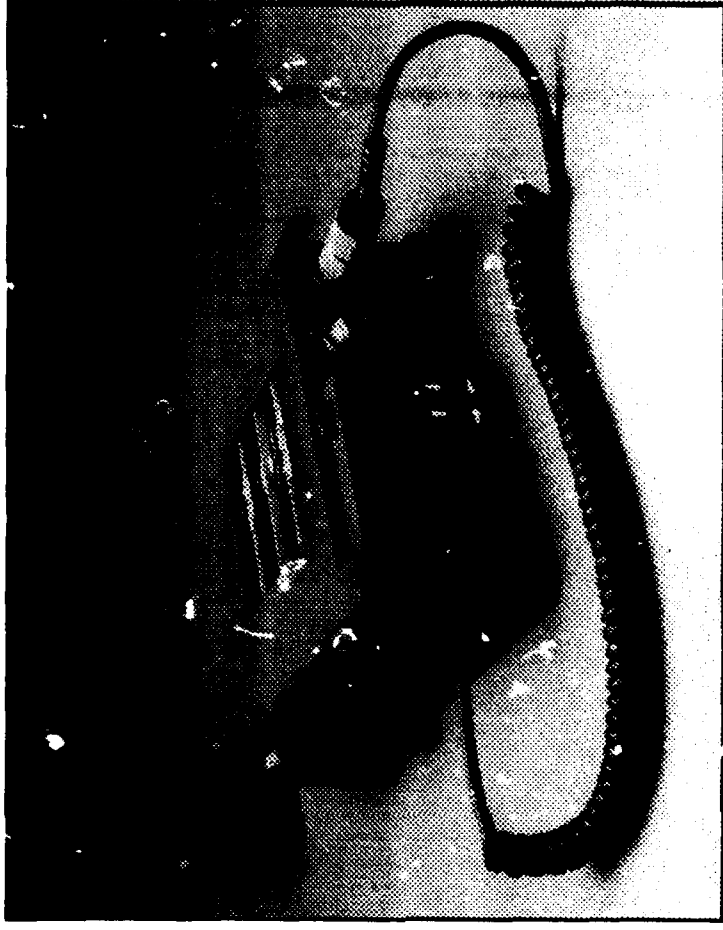
PROTECT OUR USE

- OUR INFOSEC IS SECOND TO NONE
- SIMPLIFY OUR TRANSEC APPROACHES
- ADVANCE MODERN MODULATION TECHNIQUES
- INVESTIGATE PROPAGATION PHENOMENA



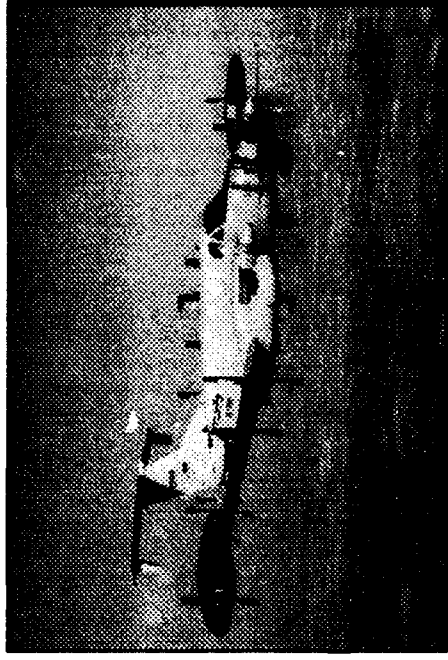
PROTECT OUR USE

- **FUTURE THRUST-
MULTI BAND MULTIMODE**
 - **AUTOMATIC ADAPTIVE
FEATURES**
 - **EASE ALLIED AND JOINT
INTEROPERABILITY**
 - **PROVIDE SOFTWARE
CONTROL**
 - **EASILY REPROGRAMMABLE
IN THE FIELD**



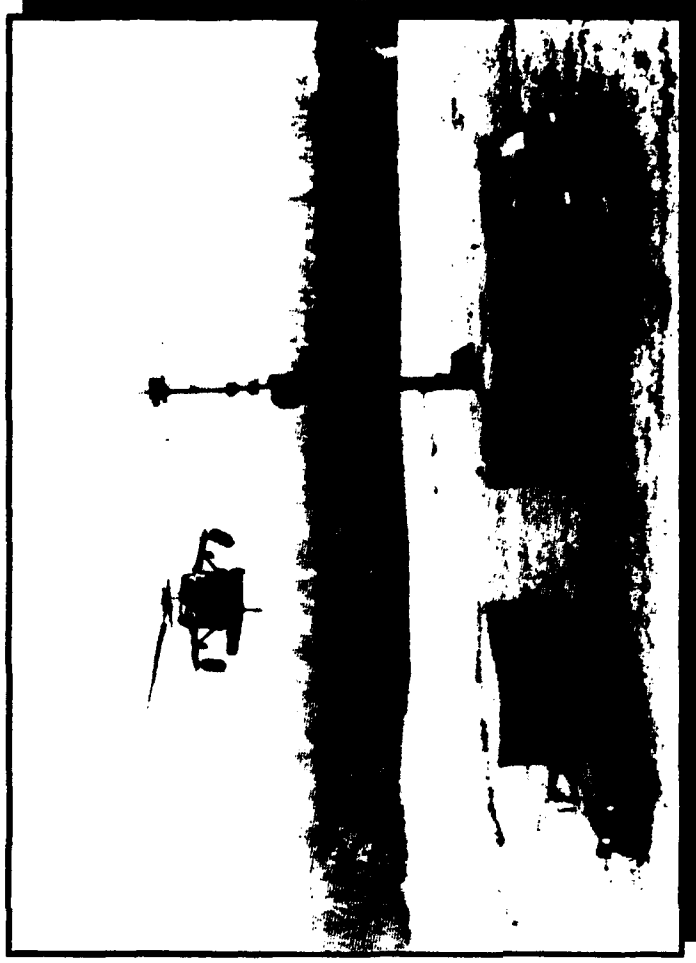
EXPLOIT ENEMY USE

- EXPLOIT BOTH COMINT AND ELINT
- IMPROVE ACCURACIES OF ENEMY LOCATION
- DEVELOP THREAT ASSESSMENT
- PROVIDE TARGETING FOR PHYSICAL DESTRUCTION



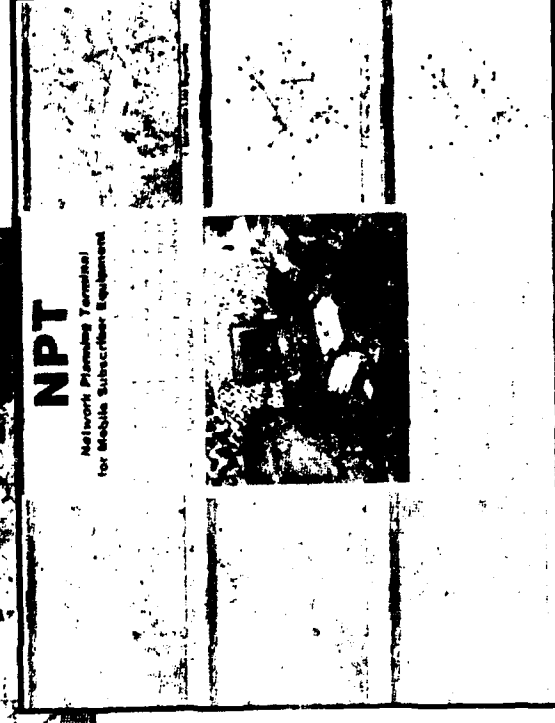
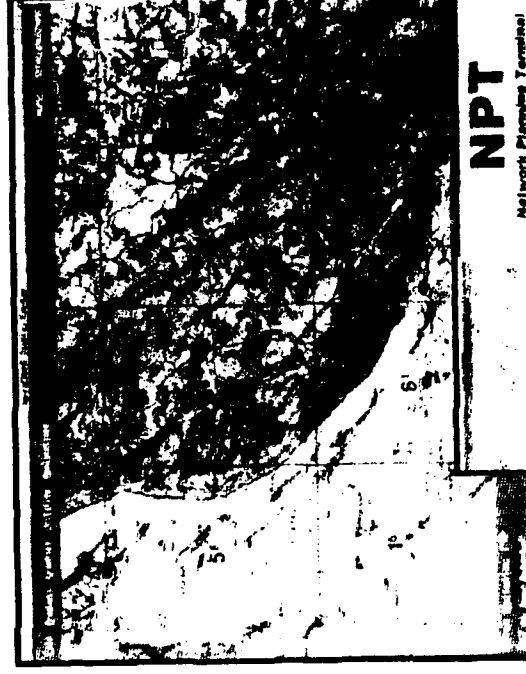
DENY ENEMY USE

- DEVELOP ENHANCED ELECTRONIC ATTACK
- PERFORM PRECISE SURGICAL JAMMING
- USE ELECTRONICS TO DECEIVE THE ENEMY
- COORDINATE TARGETS WITH FIRE SUPPORT



MANAGE THE SPECTRUM

- FACILITATE NETWORK PLANNING
- ASSIGN FREQUENCIES WITHOUT CONFLICT
- SIMPLIFY CONTROL OF MULTIPLE SYSTEMS
- COORDINATE COMMUNICATIONS AND JAMMING



DISRUPT AND DENY SESSION SPEAKERS

MODERATOR

Mr. Robert F. Giordano

Director, Research, Development & Engineering Center, CECOM

ADVANCED CONCEPTS AND TECHNOLOGY (ACT II) PROGRAM

Dr. Kenneth Gabriel

Army Research Office

ELECTRONIC WARFARE TECHNOLOGY & IEW TECHNOLOGY ASSESSMENT CENTER

Mr. Ronald J. Dlugosz

Intelligence and Electronic Warfare Directorate, CECOM

ARMY SECURE TACTICAL INITIATIVE (ASTI) TRUSTED NETWORK BASE (TNB)

Mr. Joseph Pucilowski, Jr.

Director, Space & Terrestrial Communications, CECOM

SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL

Mr. Gary P. Martin

PM MILSTAR

NOTES

**THE ARMY ADVANCED CONCEPTS AND
TECHNOLOGIES II PROGRAM
(ACT II)**

**Dr. Kenneth A. Gabriel
Chief, Army Research Office - Washington**

11 May 1994

UNCLASSIFIED

POINT PAPER

SUBJECT: Advanced Concepts and Technology (ACT) II

EXECUTIVE SUMMARY: The ACT II program provides a timely, low overhead mechanism for industry participation in the Army's Louisiana Maneuvers (LAM) and TRADOC Battle Labs. The program responds to high priority needs identified by the LAM Task Force and TRADOC Battle Labs, by fostering early cooperation between warfighters and the private sector R&D community. Advanced concepts and technologies funded by ACT II will be demonstrated using various modes including Advanced Warfighting Demonstrations and Experiments and Distributed Interactive Simulation.

The ACT II program is managed by an Army General Officer/Senior Executive Service level committee called the ACT II Committee. This committee reviews and approves the ACT II program, and allocates funding for ACT II projects. The committee chair appoints an Executive Secretary to manage the administrative aspects of the program, and to coordinate support by the Army Materiel Command, TRADOC, the Corps of Engineers, the Deputy Chief of Staff for Personnel, and the Army Medical Research and Development Command. The ACT II Technology Evaluation Board (TEB) is chaired by the Director, US Army Research Office (ARO).

Funding of the program in fiscal year 1994 is approximately \$10 M supporting 31 ACT II projects. \$40 M are requested for the program in the FY95 budget. The ACT II Broad Agency Announcement for FY 95 will be announced on or about 15 May.

BRIEFER: Dr. Kenneth A. Gabriel, Chief, Army Research Office - Washington, ARO-W, Suite 8N31, 50001 Eisenhower Avenue, Alexandria, VA 22333-0001, 703-274-9240, FAX 703-274-8261.

CECOM ACTION OFFICER
Randolph Jackson
Electronic Engineer
Advanced Systems Directorate
908-532-0364

BACKGROUND

- **ACT I ESTABLISHED IN 1974 BY THE ARMY DCS(RDA)**
- **ACT II LAUNCHED BY OASA(RDA) TO SUPPORT BATTLE LABS
AND THE LOUISIANA MANEUVER (LAM) TASK FORCE**
- **FY94 FUNDING IS \$10M**
- **FY95 BUDGET REQUEST IS \$40M**
- **FOCUS ON TECHNOLOGY DEMONSTRATION, NOT DEVELOPED**
- **12 MONTHS PERIOD OF PERFORMANCE, UP TO \$1.5M**

PROGRAM OBJECTIVES

- **FUND INDUSTRY/ACADEMIA TO DEMONSTRATE PROMISING
ADVANCED CONCEPTS AND TECHNOLOGY AT THE BATTLE
LABS AND LAM EXERCISES**
- **ENCOURAGE APPLICATION OF NEW TECHNOLOGY OR
TECHNOLOGY NOT CURRENTLY AVAILABLE TO THE ARMY**
- **SEEK PROJECTS WHICH WOULD NOT OTHERWISE BE SUPPORTED
BECAUSE OF RISK, UNCONVENTIONAL APPROACH, OR LACK OF
FUNDED ARMY EFFORT IN THE TECHNOLOGY AREA**
- **TRANSITION SUCCESSFUL TECHNOLOGY TO END ITEMS OR A
REGULAR FUNDED ARMY RESEARCH AND DEVELOPMENT
PROGRAM**
- **SEEK HIGHLY LEVERAGED EFFORTS WHICH APPEAR LIKELY TO
HAVE A VERY IMPORTANT IMPACT ON THE ARMY IF SUCCESSFUL**

BATTLE LABS & LAM

- **SIX ARMY BATTLE LABS:**

1. **BATTLE COMMAND**
2. **COMBAT SERVICE SUPPORT**
3. **DISMOUNTED BATTLESPACE**
4. **DEPTH AND SIMULTANEOUS ATTACK**
5. **EARLY ENTRY LETHALITY AND SURVIVABILITY**
6. **MOUNTED WARFIGHTING BATTLE SPACE**

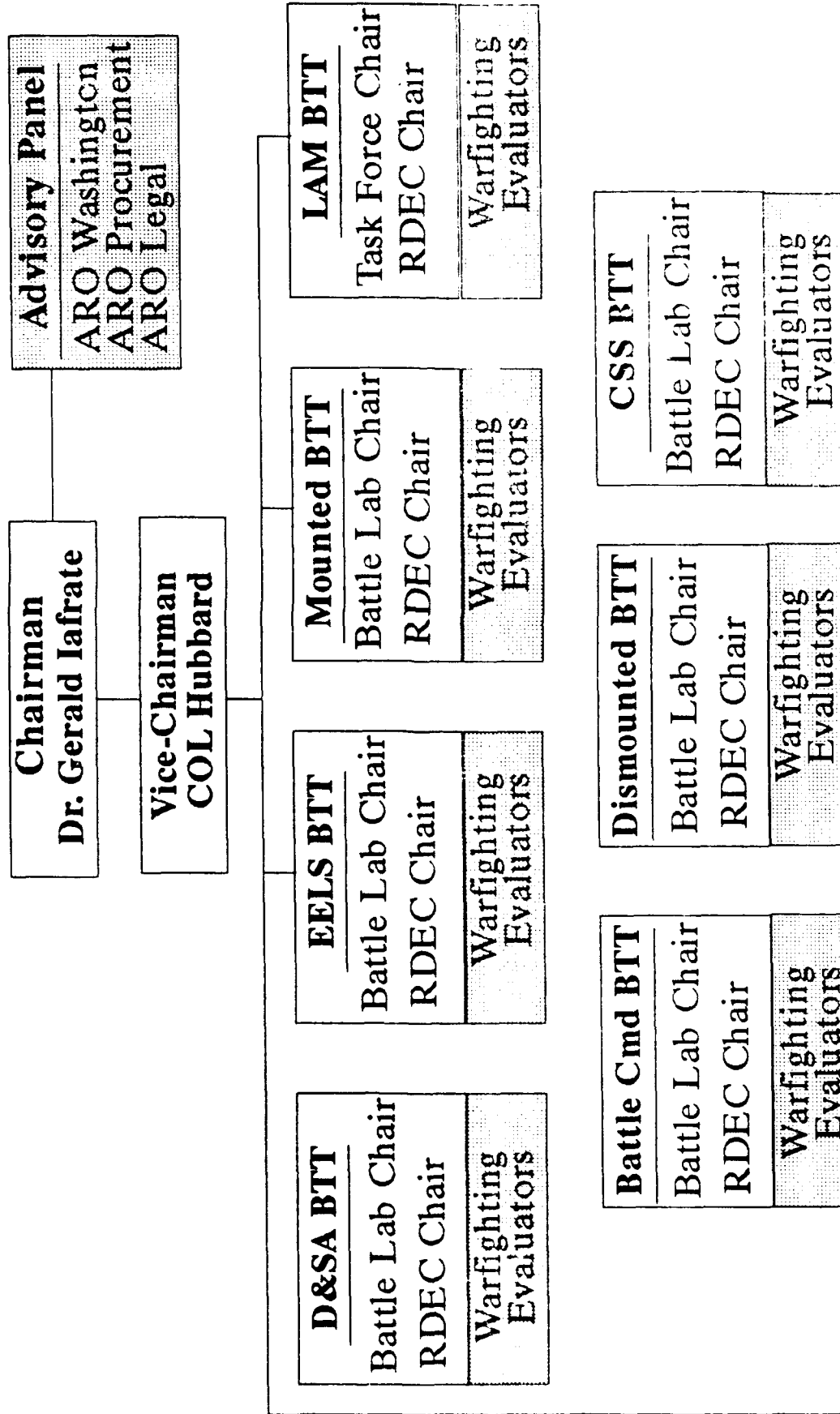
- **LOUISIANA MANEUVER TASK FORCE**

ACT II EVALUATION PLAYERS AND ROLES

- **TECHNICAL EVALUATORS**
 - Pooled into the Technical Evaluation Board (TEB)
 - Evaluate technical excellence
- **WARFIGHTING EVALUATORS**
 - Assigned to the Battle Technology Teams
 - Evaluate military merit
- **BTT CO-CHAIRS**
 - Battle Labs
 - RDEC
- **TECHNICAL EVALUATION BOARD**
 - Develops recommended overall 1-N list across Battle Labs and LAMs

ACT II TECHNICAL EVALUATION BOARD

and Supporting Staff



TECHNOLOGY EVALUATION PANEL

[] = SUPPORT STAFF

NEW FY95 ACT II PROCESS

- **2-PAGE PREPROPOSAL**
 - **USER EVALUATION AND PRIORITIZATION**
 - **FULL PROPOSALS BY INVITATION ONLY**
 - **LIMIT NUMBER OF FULL PROPOSALS TO 2-3 X AVAILABLE \$**
- **TECHNICAL EVALUATION AT RDECs/Labs**
- **ELIMINATE PROPOSALS NOT TECHNICALLY VIABLE**
- **USER EVALUATION WITH TECHNICAL SUPPORT AT ARO**
- **SEB AT ARO**
- **GOSC**
- **EXECUTION**
- **ISSUE: MUST CONSIDER GFE/GFD EARLY ON**

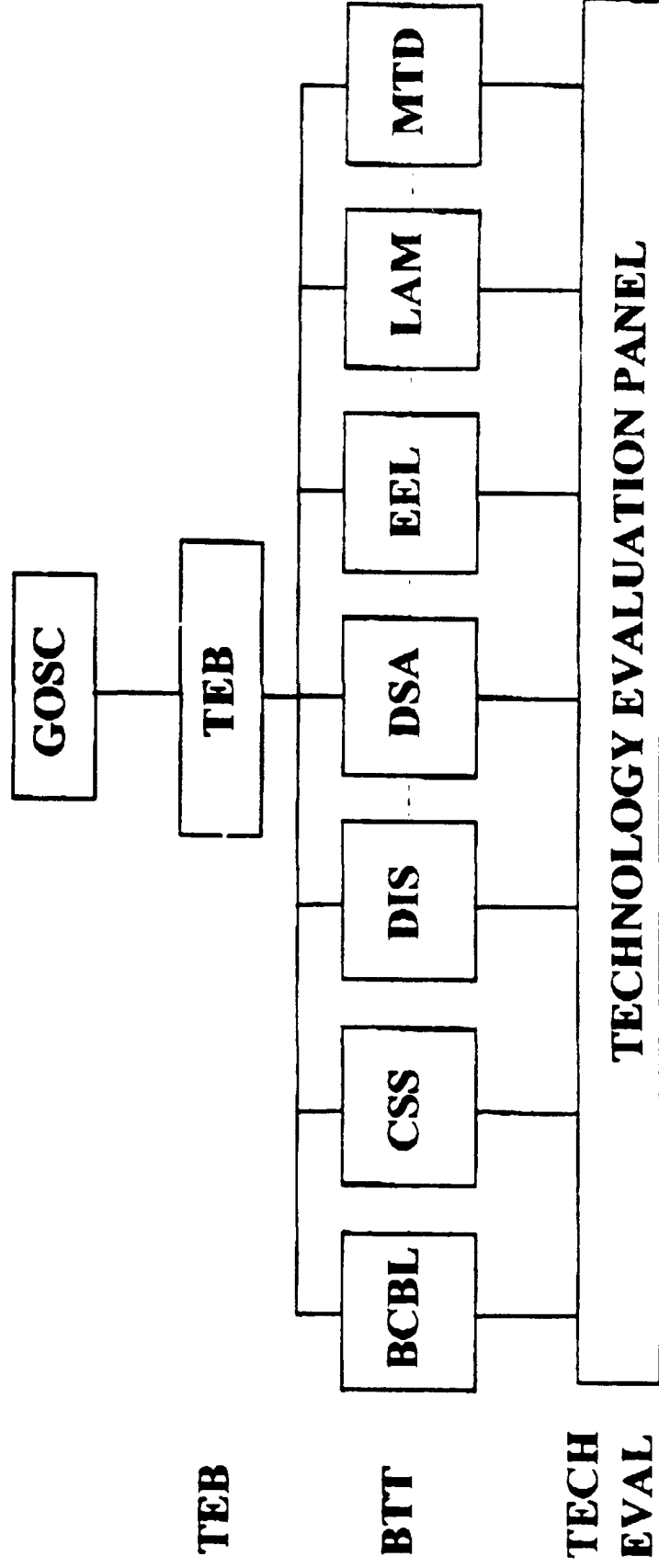
ACT II MILESTONES FY95 CYCLE (ESTIMATED)

EVENT	J	F	M	A	M	J	J	A	S	O	N	D
PREPARATION OF DRAFT BAA		○	▲									
BAA STAFFING AND PUBLICATION			○	▲								
ISSUE FINAL BAA				▲								
BAA OPEN (PRE-PROPOSAL PREPARATION)				○	▲							
RECEIVE AND LOG PREPROPOSALS					○	▲						
EVALUATE PREPROPOSALS					○	▲						
ISSUE INVITATIONS FOR FULL PROPOSALS						○	▲					
PROP PREPARATION						○	▲					
RECEIVE/EVALUATE FULL PROPOSALS							○	▲				
TEB EVALUATION AND PRIORITIZATION OF FULL PROPOSALS									○	▲		
ACT II GOSC REVIEW/APPROVAL OF T1 & RECOMMENDATIONS										○	▲	
HANDOFF OF WINNING PROPOSALS TO PROCUREMENT OFFICES												▲

ACT II TECHNOLOGY AREAS

1. **MATERIALS**
2. **PRODUCTION MANUFACTURING, DESIGN AUTOMATION**
3. **COMPUTERS, HIGH SPEED COMPUTATION**
4. **COMPUTER SOFTWARE**
5. **SIMULATION, DISPLAYS, VIRTUAL REALITY**
6. **HUMAN-SYSTEMS INTERFACE**
7. **ARTIFICIAL INTELLIGENCE**
8. **ROBOTICS AND DYNAMICS**
9. **ELECTRONICS, PHOTONICS**
10. **TELECOMMUNICATIONS, INFORMATION PROCESSING, NETWORKING**
11. **SENSORS**
12. **LASER OPTICS AND DEVICES**
13. **NAVIGATION, GUIDANCE, VEHICLE CONTROL**
14. **PROPULSION, VEHICULAR SYSTEMS**
15. **DIRECTED ENERGY, KINETIC ENERGY**
16. **MUNITIONS, ENERGETIC MATERIALS, PROPULSION**
17. **SURVIVABILITY, HARDENING**
18. **CHEMICAL/BIOLOGICAL SYSTEMS, BIOTECHNOLOGY**
19. **POWER GENERATION, STORAGE, CONDITIONING**
20. **ENGINEERING STRUCTURES, MECHANICS, CONSTRUCTION**
21. **LIFE, MEDICAL, BEHAVIORAL SCIENCE**
22. **ENVIRONMENTAL EFFECTS, GEO-SCIENCES**
23. **ROTOCRAFT**
24. **AIR DROP**

Technical Evaluation Hierarchy



NOTES

**ELECTRONIC WARFARE TECHNOLOGY
AND
IEW TECHNOLOGY ASSESSMENT CENTER**

**MR. RONALD DLUGOSZ
COMMUNICATIONS-ELECTRONICS COMMAND
RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
INTELLIGENCE AND ELECTRONIC WARFARE
DIRECTORATE**

UNCLASSIFIED

30 March 1994

POINT PAPER

SUBJECT: Intelligence and Electronic Warfare Technology Initiatives

OBJECTIVE: To provide information on the CECOM Intelligence and Electronic Warfare Directorate's (IEWD's) interest and contract opportunities in the areas of Intercept Technology, Tactical Intelligence Data Fusion Technology, and Electronic Warfare Technology. We also want to acquaint industry with the IEW Technical Assessment Center at Fort Huachuca, AZ.

FACTS: IEWD is developing the technologies necessary for U.S. Army systems to locate and exploit hostile command, control, communications (C³) and electronic systems; and, to process, analyze and report battlefield intelligence.

This briefing describes the technology programs that support these three areas. It also provides general timelines for industry involvement and current funding ranges.

BRIEFER: Intercept and Tactical Intelligence Data Fusion Technology -
Mr. Ronald J. Dlugosz, Chief, Advanced Concepts Division, AMSEL-RD-IEW-TA-M, (908) 554-5426;
DSN 996-5426

Electronic Warfare Technology and IEW Technical Assessment Center -
Mr. Kurt Kovach, Chief, Simulation and Modeling Branch, Advanced Concepts Division,
AMSEL-RD-IEW-TAS-M, (908) 544-5294, DSN 996-5294.

ACTION OFFICER:
Linda S. Monroe
GS-9/PA
Industrial Liaison
(703) 349-7370;
DSN 229-7370

ELECTRONIC WARFARE TECHNOLOGY

EW TECHNOLOGY

DESCRIPTION

Deny hostile units use of their command, control and communications (C3); and radar systems

EW TECHNOLOGY

STATUS

- Conducting research and exploratory development in new signals electronic warfare and critical components
- Developing demonstration programs for new stand-in and stand-off communications jamming concepts
- Developing for non-communications countermeasures for non-platform protection applications
- Transitioning to gaining tactical electronic warfare systems, such as, Ground Based Common Sensor - Heavy (GBCS-H) and Advanced QUICKFIX

EW TECHNOLOGY OBJECTIVES

- Jam modern signals
- Deceive electronic systems
- Avoid electromagnetic fratricide
- Automate the jamming process
- Develop more efficient, smaller jammer components

EW TECHNOLOGY REQUIREMENTS

- Multiband coverage
- Effective operation in dense signal environment
- Efficient power requirements
- Technologies must be suitable for mobile tactical implementation
- Less dependence on operators

EW TECHNOLOGY

PAYOFFS

- Small tactical antenna systems for ESM and jamming applications
- Fratricide avoidance
- Ability to surgically jam
- Ability to jam from remote and mobile platforms
- Deceive hostile systems

EW TECHNOLOGY MILESTONES - FY95 AND BEYOND

- **Initiate additional antenna technology efforts for efficient tactical and multiband antennas**
- **Continue stand-in jammer demonstration**
- **Explore other innovative electronic warfare technologies**
- **Initiate Electronic Countermeasures (ECM) against modern mobile communications**

EW TECHNOLOGY

MILESTONES - FY95 AND BEYOND (Cont'd)

- **Explore additional expert controller technologies for jammers**
- **Explore other innovative electronic warfare technologies**
- **Initiate electronic intelligence and support measures against highly agile and low probability of intercept emitters**

EW TECHNOLOGY CONTRACT OPPORTUNITIES

- Title: Electronic Warfare Techniques
- Objectives:
 - Communication jammer components, including small HF antennas
 - Automated techniques for jammer control techniques
 - Electronic warfare against new signals
 - Application of breakthrough technologies to communications EW
- Type: Multiple Competitive - CPFF contracts from BAA and SBIR solicitations
- Schedule - Award dates - FY95-96
(BAA closes Jan 95 for FY95 award)
- Estimated Value: Approximately \$5M for FY94-95
- POC/Telephone No.: Jim Yolda (703) 349-6911

FUNDING PROFILE

YEAR	TITLE	APPROX AMOUNT (\$ IN MILLIONS)

FY95-97	EW TECHNOLOGY	5

	TOTAL	5

CECOM

USAIC&FH

-ZOOM

IEW

PEO-IEW

ARL

TEC

TAC

PEOOS

IEW TECHNOLOGY ASSESSMENT CENTER

- Provide integrated user/developer/acquirer examination of promising technologies for IEW applications
- Replicate through analysis, simulation or demonstration technology to support formulation of the IEW architecture
- Evaluate potential benefits/impacts to the overall IEW mission

IEW TECHNOLOGY ASSESSMENT CENTER

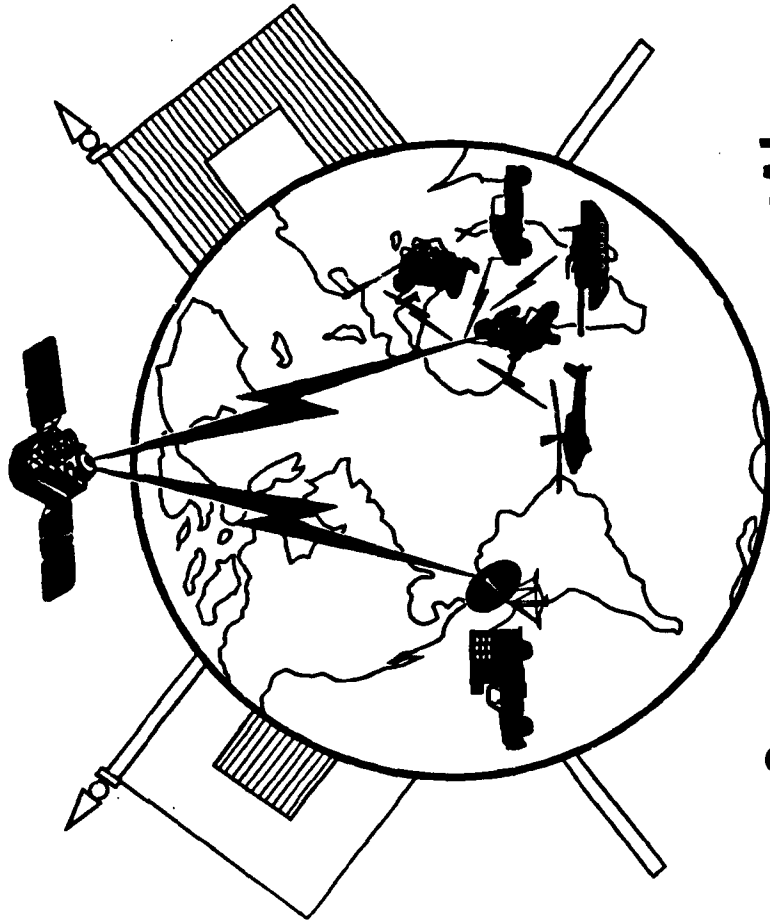
- Located at Fort Huachuca, Arizona
- Members: PEO IEW, USAIC&FH, PEO CCS, CECOM, INSCOM, ARL and TEC
- Operations managed by CECOM, RDEC (IEWD)
- Industry encouraged to nominate projects for assessment

IEW TECHNOLOGY ASSESSMENT CENTER

NOMINATION PROCEDURES

- Contact the IEW TAC to discuss your project.
Telephone No. 602-533-2060; Fax No. 602-538-7854
- If project is determined to be of interest, send synopsis/white paper to IEW TAC
 - Describe why technology is applicable
 - What will the technology do for Army IEW
- Mail Address: Manager
IEW Technology Assessment Center
ATTN: AMSEL-RD-IEW-TAC
Fort Huachuca, AZ 85613-6000
- More details on page 63 in 19 February 1993,
CBD announcement

NOTES



SPACE & TERRESTRIAL COMMUNICATIONS DIRECTORATE

**ARMY SECURE TACTICAL INITIATIVE (ASTI)
TRUSTED NETWORK BASE (TNB)**

JOSEPH J. PUCILOWSKI, Jr.

**DIRECTOR, SPACE AND TERRESTRIAL
COMMUNICATIONS
RESEARCH, DEVELOPMENT &
ENGINEERING CENTER**

UNCLASSIFIED

POINT PAPER

SUBJECT: Army Secure Tactical Initiative (ASTI) Trusted Network Base (TNB)

EXECUTIVE SUMMARY: The Army Secure Tactical Initiative (ASTI) program consists of three thrust areas: Tactical End-to-End Encryption Device (TEED), Trusted Network Base (TNB) and Secure Gateway (SEGAT). Focused on Mobile Subscriber Equipment (MSE) Packet Network (MPN) users, TNB develops the ancillary hardware and software in support of the TEED.

The TEED is a device envisioned as an applique that resides between the workstation and the communications media and allows for multilevel security (MLS) and end-to-end encryption. TNB is envisioned as a development of a set of technologies that can ensure network-based security through the network components. SEGAT is envisioned as the development of a BLACK gateway between the tactical packet network and the Defense Data Network (DDN), and allied communications.

The objective of the program is to provide systems support for TEED's in large networks. The benefit to the Army is that it provides a mechanism by which all computers can use a single network for communications, irrespective of the security classification of the computer.

Several opportunities are expected over the next few years. The proof of concept development effort which is programmed for FY-95. Integration with TEED is scheduled for FY96, FY97 and Integration with ISYSCON is scheduled for FY97.

Briefer: Joseph J. Pucilowski, Jr., Director, Space & Terrestrial Communications Directorate, AMSEL-RD-ST-D, (908) 544-4449.

ACTION OFFICER
Bill Kamenel, Program Manager
ASTI/TNB
(908) 544-4163

ASTI

PROGRAM OVERVIEW

CONSISTS OF THREE THRUST AREAS:

- A. TACTICAL END-TO-END ENCRYPTION
DEVICE (TEED)**
- B. TRUSTED NETWORK BASE (TNB)**
- C. SECURE GATEWAY (SEGAT)**

ASTI-TEED

DESCRIPTION

DEVELOPS A TACTICAL INTERNET SECURITY DEVICE THAT PROVIDES SECURITY SERVICES IN SUPPORT OF MULTILEVEL SECURITY IN ARMY AND DOD NETWORKS. CURRENTLY ENVISIONED AS AN APPLIQUE THAT RESIDES BETWEEN THE WORKSTATION AND THE COMMUNICATIONS MEDIA.

ASTI-TNB

DESCRIPTION

DEVELOPMENT EFFORT IN SUPPORT OF ENSURING THE SECURITY OF ARMY TACTICAL COMPUTER NETWORKS. FOCUSED ON MOBILE SUBSCRIBER EQUIPMENT (MSE) PACKET NETWORK (MPN) USERS. TNB DEVELOPS THE ANCILLARY HARDWARE AND SOFTWARE IN SUPPORT OF THE TEED.

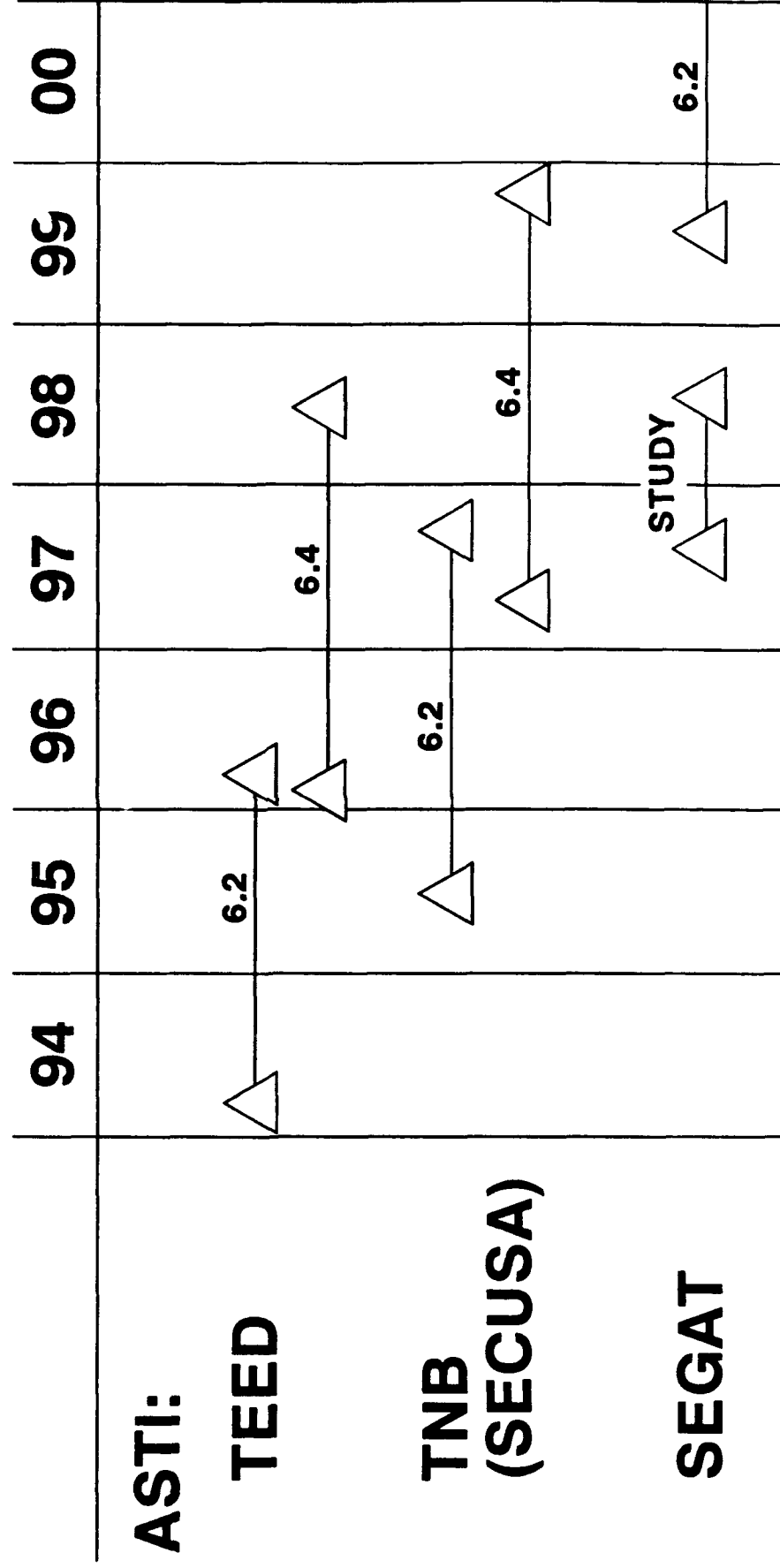
ASTI-SEGAT

DESCRIPTION

DEVELOPS A "BLACK" GATEWAY BETWEEN THE MSE PACKET NETWORK AND DDN AND ALLIES AND NETWORKS OF DIFFERING SECURITY LEVELS. ALSO DEVELOPS AN ALGORITHM TRANSLATOR SO THAT DIFFERENT ARMY SECURITY SCHEMES MIGHT TALK TO EACH OTHER DIRECTLY.

ASTI

PROGRAM SCHEDULE



ASTI-TNB

- **PROVIDES SECURITY SERVICES FOR
LARGE NETWORKS PROTECTED BY TEED**
- **ENABLES TEED USE IN A SYSTEM
CONFIGURATION**
- **CONSISTS OF A SECURITY SUPPORT
CENTER HOSTING VARIOUS MODULES**

ASTI-TNB

THE SECURITY SUPPORT CENTER PERFORMS SECURE NETWORK MANAGEMENT AND SUPPORT FOR PROTECTED HOSTS THROUGH THE FOLLOWING MODULES:

KEY MANAGEMENT (PHYSICAL KEY DISTRIBUTION, FIRE FLY RE-KEY), ACCESS CONTROL LISTS (ACLs), ACL DISSEMINATION.

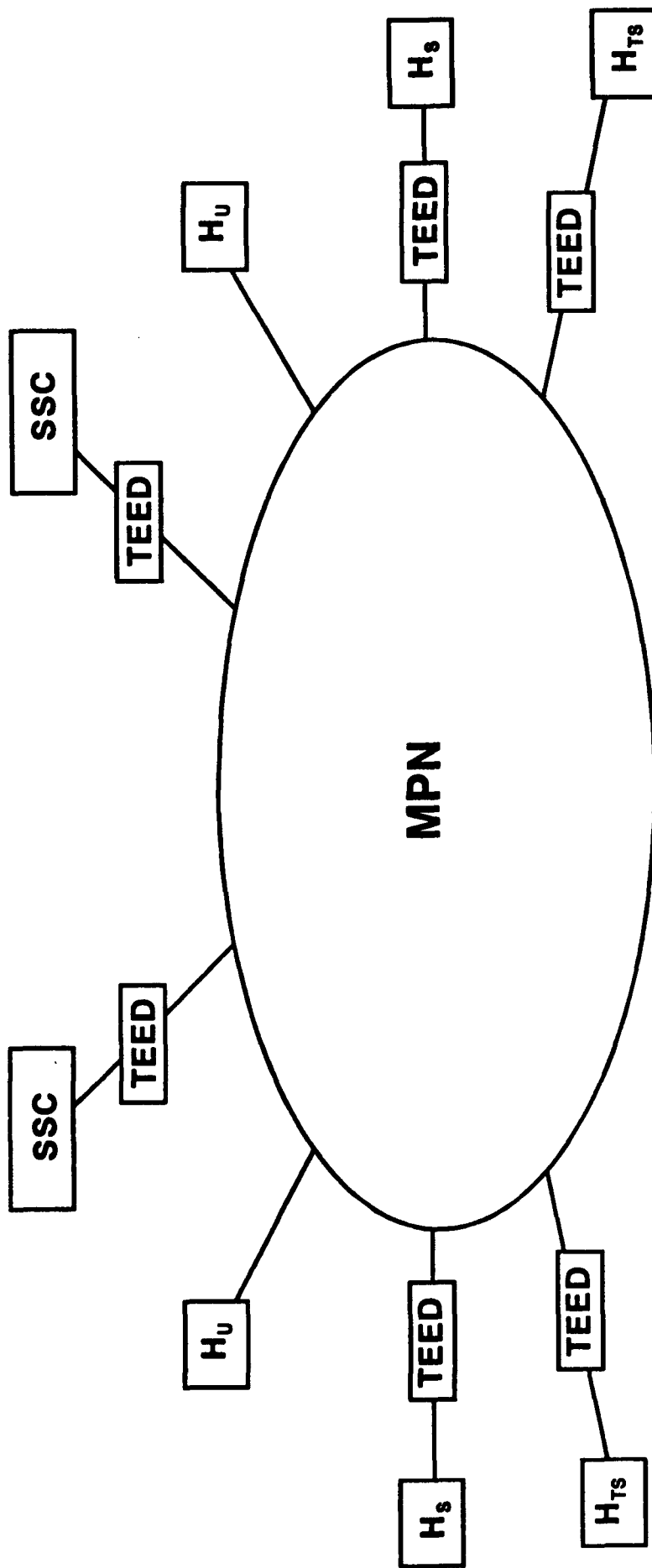
COMPROMISE RECOVERY.

AUDIT LOG AND ANALYSIS.

REMOTE COMMANDS.

INFORMATION WARFARE ALERT.

ASTI-TNB



LEGEND:

TEED = TACTICAL END-TO-END
MPN = MSE PACKET NETWORK
SSC = SECURITY SUPPORT CENTER
H_u = HOST @ UNCLASSIFIED
H_s = HOST @ SECRET
H_{TS} = HOST @ TOP SECRET

ASTI-TNB OBJECTIVES

- **PROVIDE SYSTEMS SUPPORT FOR
TEED'S USE IN LARGE NETWORKS**

ASTI-TNB PAYOFF

- **EVENTUAL ELIMINATION OF REDUNDANT NETWORKS AND OPERATORS TO ALLOW A MULTIPLE SECURITY LEVEL TRANSPORT NETWORK IN THE TACTICAL BATTLEFIELD**
- **INCORPORATED INTO ARMY'S INTEGRATED SYSTEM CONTROL (ISYCON) FACILITY**

ASTI-TNB MILESTONES

- **PROOF OF CONCEPT AWARD: FY-95**
- **INTEGRATION WITH TEED: FY96, FY-97**
- **INTEGRATION WITH ISY\$CON: FY-97**

ASTI-TNB
FUNDING PROFILE (\$M)
EST. RDTE

FY-95	0.3 - 0.8
FY-96	0.5 - 1.0
FY-97	0.5 - 1.0
TOTAL	1.3 - 2.8

CONTRACT OPPORTUNITY

TITLE: ASTI-TNB

**OBJECTIVE: DEVELOPMENT OF SECURITY
ANCILLARIES TO TEED**

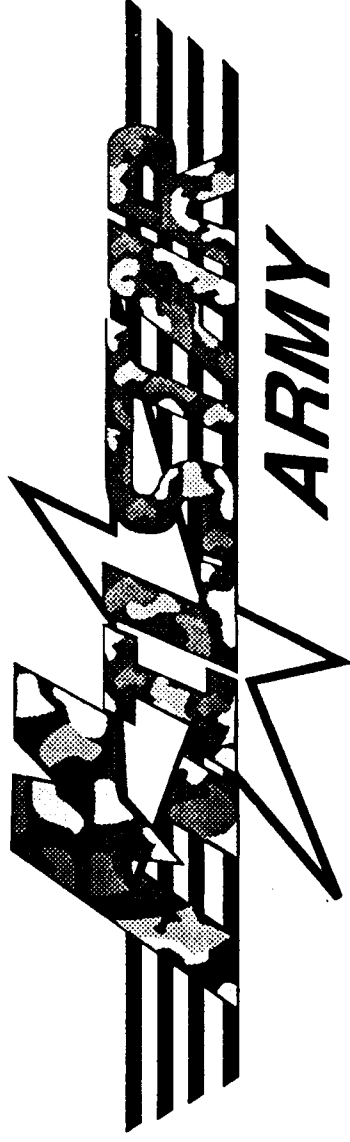
CONTRACT TYPE: CPFF

**KEY MILESTONES: RFP OUT: 1QFY95
CONTRACT AWARD: 3QFY95**

EST. VALUE: \$1.3M - 2.8M

POC: MR. BARRY SALIS, (908)544-3597

NOTES



SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL TECHNOLOGY



GARY P. MARTIN

11 MAY 94

UNCLASSIFIED

Future MILSATCOM Single Channel Terminals

Emerging Technologies

By

Gary P. Martin

The current Army MILSATCOM architecture consists of a wide variety of user terminals at all echelons, providing both multichannel and single channel communications support to the war fighter. The single channel mission is to provide worldwide tactical communications for contingency deployment, intelligence broadcast, and range extension of Combat Net Radio (CNR). In order to meet these communications needs, the single channel systems must provide:

- Low Probability of interception, detection, and exploitation.
- Anti-Jam capabilities to mitigate the threat
- Long range voice and data capability similar to Combat Net Radio
- Light, low power, and manpackable terminals.

The single channel capability is currently provided by systems operating at ultra high frequencies (UHF). While the technologies associated with operation at these frequencies enable the development of very small, lightweight terminals, they are very susceptible to jamming, interception and detection. The Army is currently developing a new satellite communications radio, the Single Channel Anti-jam Manportable (SCAMP) terminal, which is designed to meet jamming and low probability of interception and detection requirements. The SCAMP is designed for operation on extremely high frequency (EHF) satellite systems, such as Milstar, which implement the core set of requirements defined in the EHF Low Data Rate Satellite Data Link Standard (MIL-STD-1582C).

The SCAMP program is actually composed of two terminals; an interim 30 pound (Block I) terminal and an objective 12-15 pound (Block II) terminal. Common capabilities between Block I and Block II include low data rate communications at 75 - 2400 bps for data and 2400 bps for voice. The terminal provides Communications Security and Transmission Security via embedded security modules. An embedded GPS receiver provides accurate position and time for assured rapid setup and satellite acquisition (less than 10 minutes in extreme conditions). The terminal is capable of operations in extreme weather as well as biologically and chemically contaminated environments. Communications interfaces support common hardware and software devices, MSE and SINCGARS (data only), and the AN/UGC-144 tactical computer. The terminal supports battery (BA-5590 or BA-590) as well as 110 / 220 VAC operations. Block II specific capabilities include:

Weight	12 Pounds vs 30 Pounds for Block I w/batteries
Power	24 hrs on Single load of Batteries vs 12 hours
ACUS Interface	Voice and Data
Paging	While on the Move
Comm-on-the-Move	Objective Capability for Block II

Both terminal designs require the use of a number of advanced technologies. However, the Block II terminal represents the greater challenge for future research and development activities. The challenges associated with reducing overall weight by greater than 50 % from Block I, while enhancing terminal performance, will require advancements in a number of technologies. PM Milstar (Army) has developed a plan for achieving the objective Block II terminal. The plan focuses on a number of key technologies essential for achievement of the Block II capabilities. These technologies include:

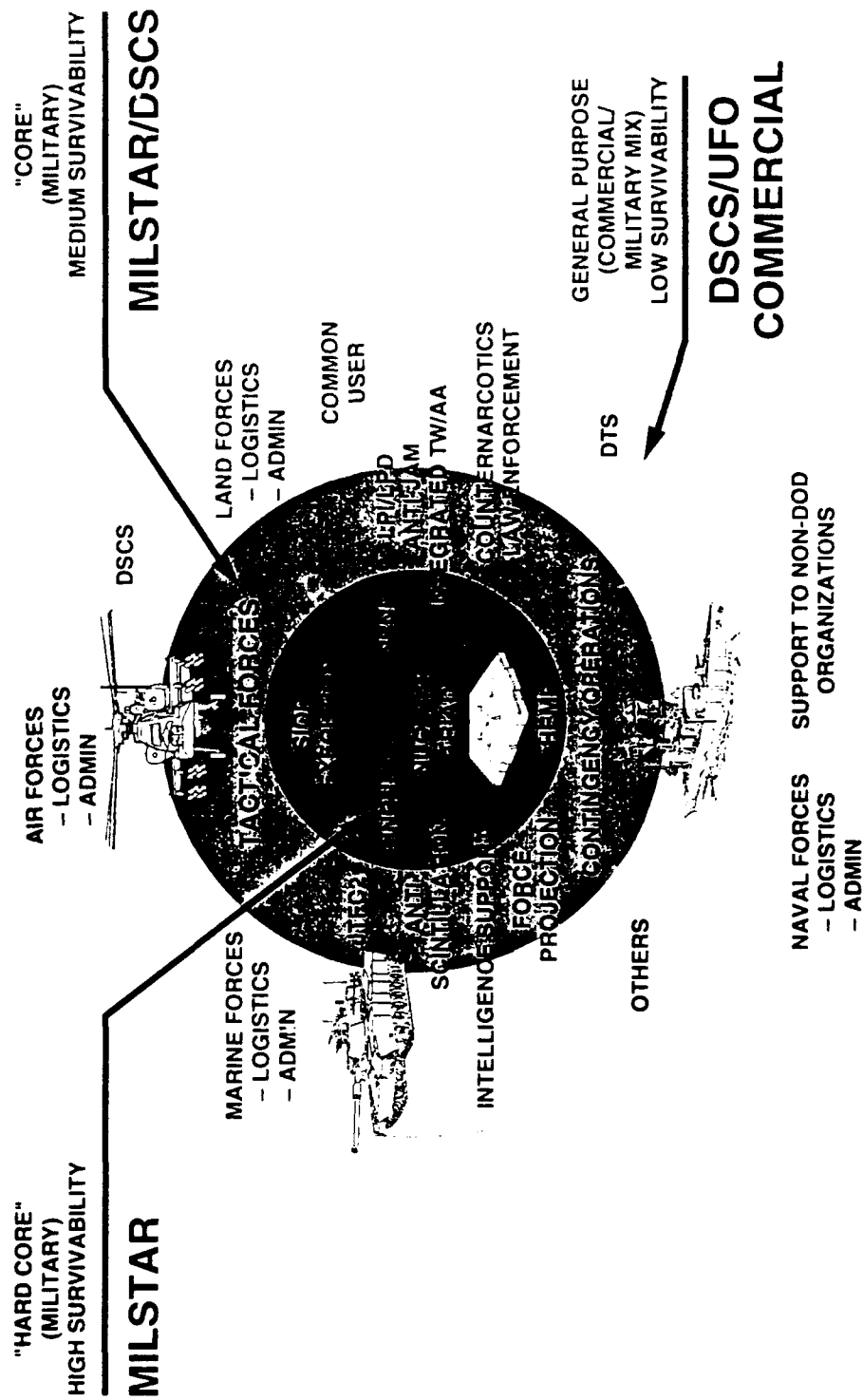
- a. Composite materials for reducing the overall weight of the terminal. A number of composite materials are currently being utilized in the Block I SCAMP program. However, a reduction of more than 50% in weight cannot be achieved solely through the use of these materials.
- b. Higher efficiency solid state devices for EHF power transmitters. Although significant effort has been expended on solid state EHF devices over the last five to ten years, the high power and efficiency to low size and weight ratio required to meet the Block II objectives is at best a few years away. Tradeoffs between the antenna aperture and transmitter power are necessary to ensure that communications capabilities are not degraded in the smaller Block II terminal.
- c. High power density batteries. Although several chemistries offer very high potentials for achieving the required performance, many of these are plague with safety, disposal or high per unit costs. The objective is to provide safe chemistries which not only meet the objective power requirements and low per unit costs but which also provide maximum utilization by other military equipment such as the SINCGARS radio.
- d. High frequency Direct Digital Synthesizers. High frequency DDSs reduce the number of upconversion chains required to obtain the 44 GHz uplink frequency, thus providing size, weight and power reductions.
- e. High efficiency DC-DC power converters. In addition to increasing the efficiency of the power converters, the number of converters required may be decreased by limiting the number of different voltage levels employed by the terminal electronics.

f. Increased use of low voltage electronics (3.3 volts versus 5.0 volts). Low voltage devices provide an immediate saving of nearly 40% in power consumption. While many electronic components are currently available in 3.3 V packages, modules such as the COMSEC and TRANSEC chips were not designed with these devices. These modules would be ideal candidates for redesign using the lower voltage devices.

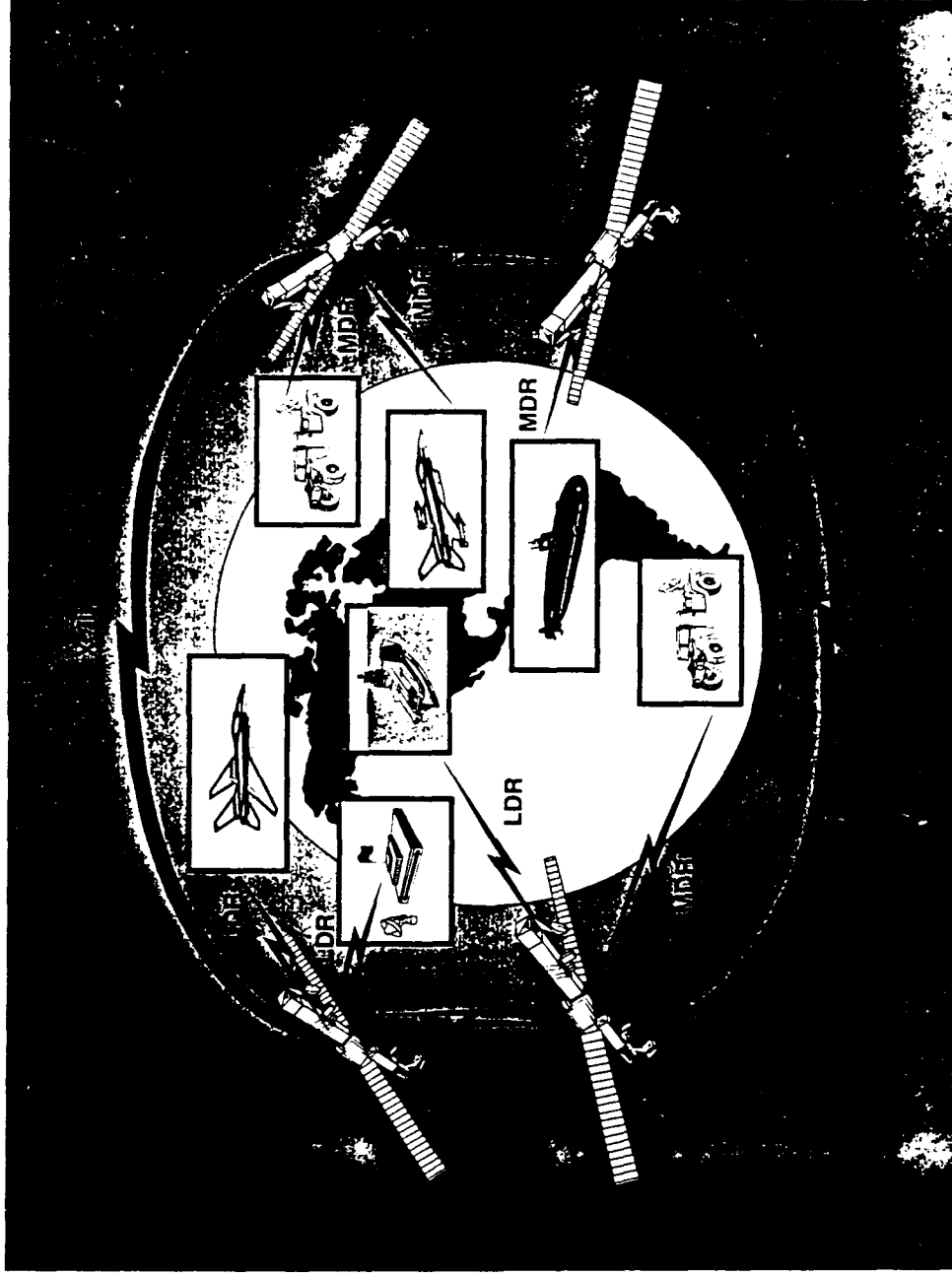
g. Low power oscillators. Reducing power consumption of the oscillators is key in helping to meet the reduced power consumption requirements because these devices are frequently on while the terminal is in operation.

The Block II program is currently scheduled to enter engineering manufacturing and development (EMD) phase in 2001. While some of these technologies are within reach, a number of them will require investments by industry and the government to ensure that required performance is achieved. Unless focused, efforts exerted in the development of these technologies may not yield sufficient performance to meet the overall objective Block II capabilities. The Army anticipates a Block II engineering feasibility program beginning in FY 99 to develop the technologies required to integrate a 12 pound SCAMP terminal. PM Milstar will continue to work with industry to update the engineering feasibility plan. By doing so it is hoped that the efforts of the engineering feasibility program will be optimized to ensure a successful block II program.

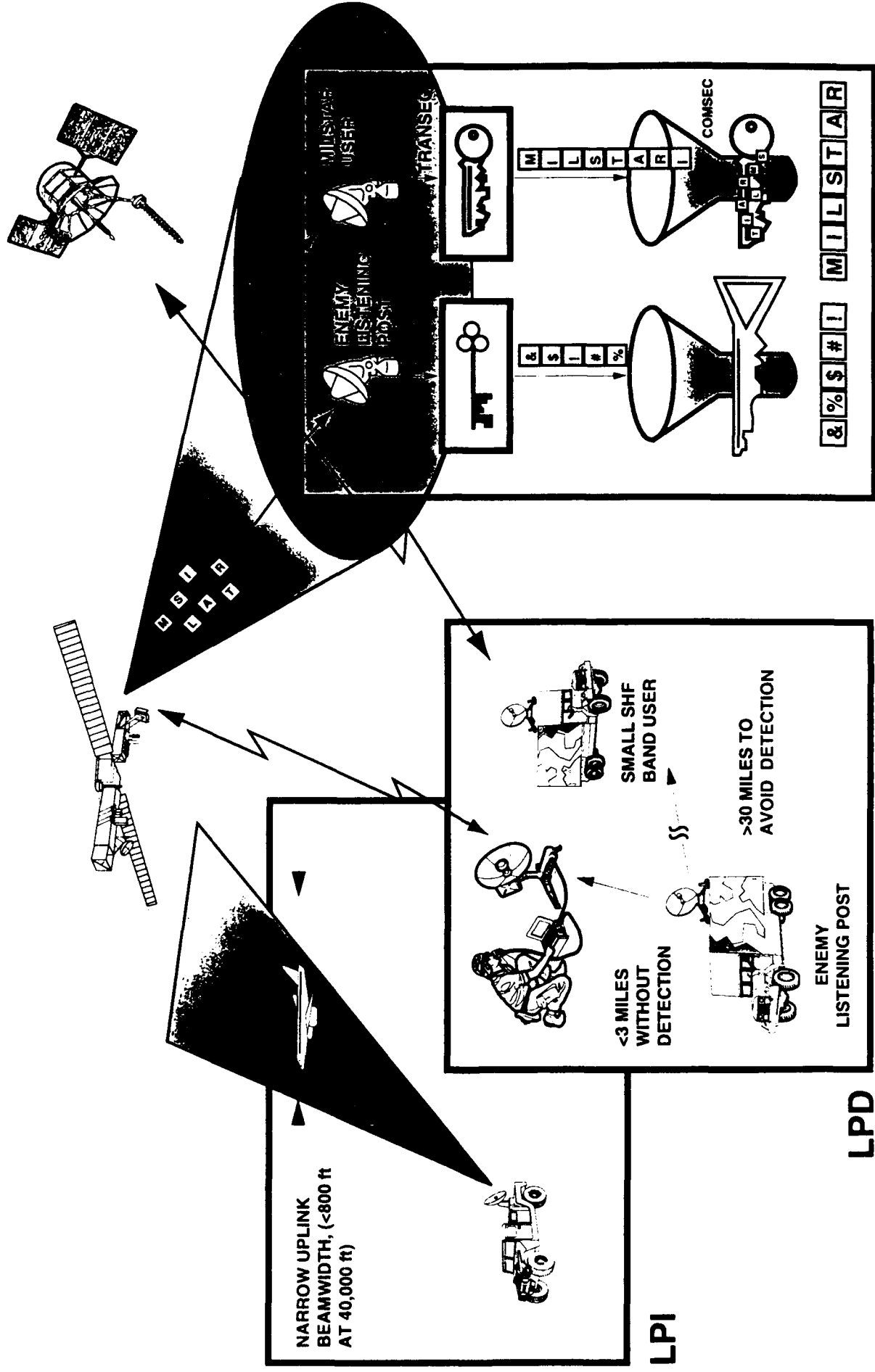
HIERARCHY OF MILSATCOM MISSIONS



MILSTAR PROVIDES GLOBAL, FLEXIBLE CONNECTIVITY



MILSTAR PROVIDES SIGNAL SECURITY



OPERATIONAL REQUIREMENTS (VALIDATED ORD)

- **USER OWNED AND OPERATED (GENERAL PURPOSE USER)**
- **SETUP TIME NO MORE THAN 10 MINUTES (5 MINUTES DESIRED)**
- **MANPORTABLE; CAPABLE OF BEING VEHICULAR MOUNTED**
- **TRANSMIT / RECEIVE LDR DATA AND VOICE (75-2400 BPS)**
- **POWERED FROM INTERNAL ARMY STANDARD BATTERY**
 - **ALSO CAPABLE OF OPERATION FROM 20-30 VDC, 110 / 220 VAC 50-60 HZ SOURCES**
- **OPERATION FROM REMOTE USER-PROVIDED I / O DEVICE**
- **EMBEDDED COMSEC / TRANSEC / AND GPS**
- **OPERATE IN NBC, HOT, BASIC COLD ENVIRONMENTS**
- **INTERFACE TO ACUS**

SCAMP (BLOCK II) REQUIREMENTS

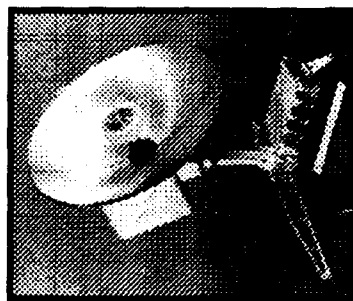
	BLOCK I	OBJECTIVE BLOCK II
WEIGHT	30 Lbs	12-15 Lbs
COMMUNICATION MODE	LDR DATA 75-2400 bps LDR VOICE 2400 bps (STU-III VOICE QUALITY)	LDR DATA 75-2400 bps HIGH QUALITY VOICE INTERFACE TO ACUS (MSE SYSTEM)
BATTERY DURATION	12 HOURS (WORST CASE)	24 HOURS (WORST CASE), OBJECTIVE 96 HRS
EMBEDDED GPS	YES	YES
OPERATOR SET-UP TIME	10 MINUTES	OBJECTIVE 5 MINUTES
ENVIRONMENTALS	FULL MIL-QUALIFIED MIL-STD-810E	FULL MIL-QUALIFIED MIL-STD-810E
MTBOMF	600 HRS	1250 HRS
COMM ON THE MOVE	NO	OBJECTIVE VEHICULAR MOUNTED
PAGING	NO	YES
IOC	FY98	TBD
APROX TOTAL PRODUCTION UNITS	456	2549

SCAMP EVOLUTION

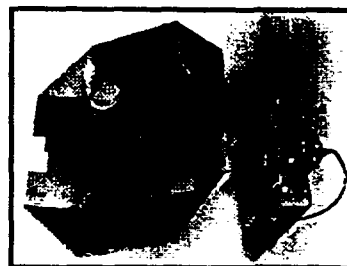
LINCOLN LABORATORY'S DEVELOPMENT 1984 TO 1988
SCAMP <ul style="list-style-type: none"> • 2 PACKAGES • 65 POUNDS • MESSAGE TRAFFIC AT 75 bps • LOW HOP RATE SPOT BEAM LINK • BATTERY POWERED



LINCOLN LABORATORY'S DEVELOPMENT 1988 TO PRESENT
ADVANCED SCAMP <ul style="list-style-type: none"> • SINGLE PACKAGE • APPROXIMATELY 34 Lbs • VOICE AND DATA AT 75-2400 bps • HIGH HOP RATE SPOT BEAM LINK • BATTERY / AC / DC POWERED



SCAMP (BLOCK I)
<ul style="list-style-type: none"> • 30 Lbs WITH CASE • VOICE AND DATA AT 75-2400 bps • EMBEDDED TRANSEC / COMSEC / GPS • BIOLOGICAL / CHEMICAL / HEMP SURVIVABILITY • ACUS / CNR DATA INTERFACE • MILITARIZED / RUGGEDIZED



SCAMP (BLOCK II)
<ul style="list-style-type: none"> • 12-15 Lbs • PAGING ON-THE-MOVE • MANPORTABLE • EXTREMELY RELIABLE

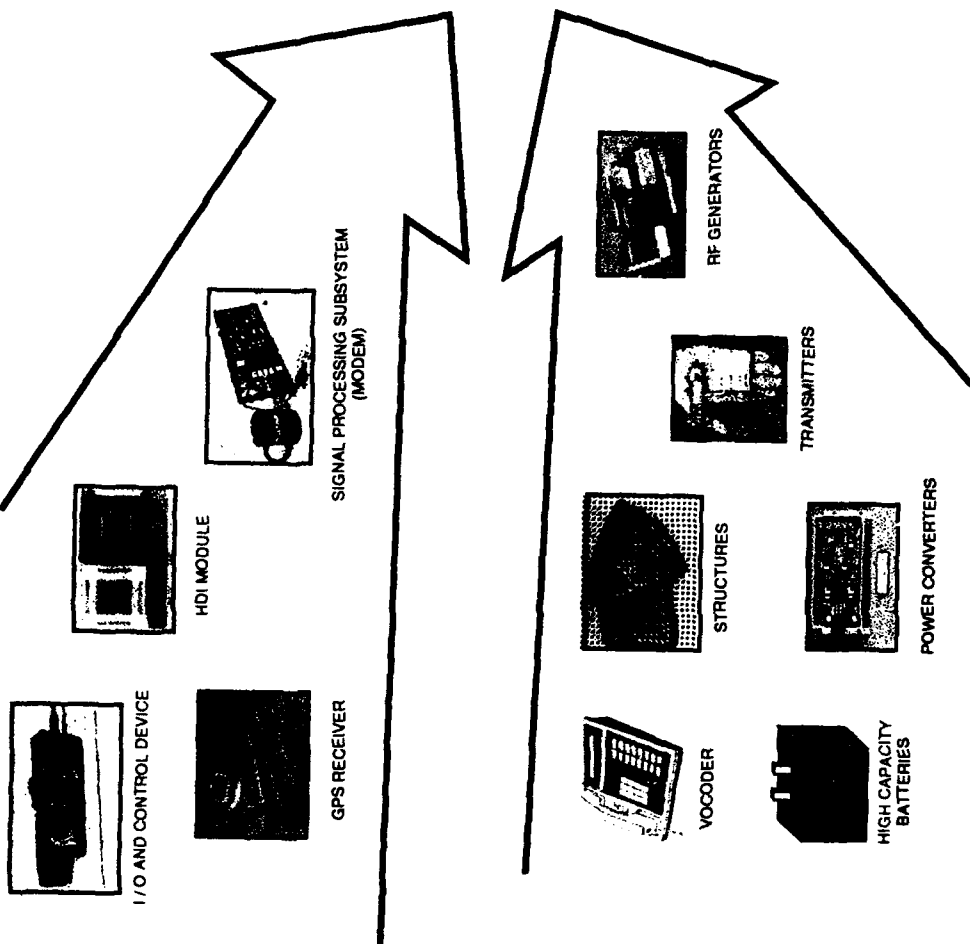
SCAMP BASELINE ACQUISITION PLAN

- **EVOLUTIONARY DEVELOPMENT TO ACHIEVE OBJECTIVE (BLOCK II)**
 - **BLOCK I (INTERIM CAPABILITY)**
 - **STEPPING STONE TO BLOCK II**
 - **DEVELOP FUNDAMENTAL TECHNOLOGY / CAPABILITY APPLICABLE TO BLOCK II**
 - **PROVIDES MANPORTABLE EHF COMMUNICATIONS IN SUPPORT OF FIRST TWO SATELLITES**
 - **BLOCK II ENGINEERING FEASIBILITY EFFORT**
 - **DEVELOP THOSE TECHNOLOGIES NOT OBTAINABLE VIA BLOCK I**
- **POSITION ARMY TO COMMIT TO BLOCK II EMD BY 1996**

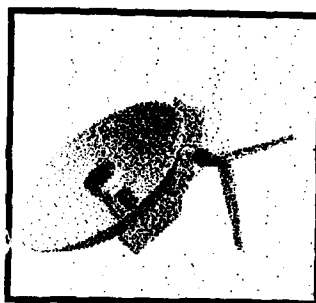
PICTORIAL OF SCAMP ACQ PLAN



BLOCK I



BLOCK II



**ENGINEERING
FEASIBILITY
EFFORT**

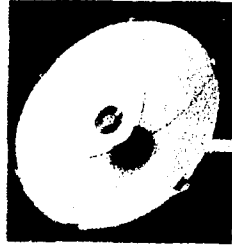
SCAMP (BLOCK II) FEASIBILITY ENGINEERING EFFORTS

THE SCAMP BLOCK II TECHNOLOGY INSERTION PROGRAM IS A THREE-YEAR EFFORT WHICH INVOLVES THE DEVELOPMENT OF TECHNOLOGIES THAT WILL PROVE THE FEASIBILITY OF THE BLOCK II TERMINAL BY LOWERING TERMINAL WEIGHT, IMPROVING POWER EFFICIENCY, ACHIEVING THE ADDITIONAL USER REQUIREMENTS FOR THE BLOCK II TERMINAL, AND ULTIMATELY YIELDING COST EFFECTIVE TECHNOLOGIES APPLICABLE TO THE DEVELOPMENT OF APPROXIMATELY 2500 SCAMP BLOCK II TERMINALS.

SCAMP BLOCK II TECHNOLOGY

CURRENT TECHNOLOGY

ANTENNA



2 FT PARABOLIC
3 LBS

DIGITAL SYSTEM / MODEM



2.4 LBS
7.3 WATTS

OBJECTIVES / GOALS

GOAL: < 1.5 POUNDS

18 INCH DIAMETER

- LOWER WEIGHT PETAL
- BACK - FED LEAKY WAVE
- SPATIAL COMBINING
- FLAPS
- COLLAPSIBLE UMBRELLA

- REDUCE DISK SIZE

- SAVES WEIGHT
- REDUCES LOADING ON DRIVE MOTORS
- REQUIRES GREATER XMIT POWER

- REDUCE POWER CONSUMPTION

- REDUCE SIZE

- REDUCE PRODUCTION COST

GOAL: .5 POUNDS

< 4 WATTS

- MCM TECHNOLOGY
- USE 3.3 V PARTS
- SINGLE CHIP MODEMS

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SCAMP BLOCK II TECHNOLOGY (CONTINUED)

CURRENT TECHNOLOGY

OBJECTIVES / GOALS

TRANSMITTER



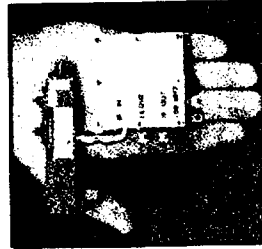
- 1.3 WATTS
- 8 % EFFICIENT
- 3.7 OZ

- INCREASE POWER
(TO COMPENSATE
FOR SMALLER DISH)
- INCREASE EFFICIENCY
(REDUCE POWER
CONSUMPTION)

GOAL:

2.5 WATTS
20 % EFFICIENCY

RECEIVER



- 2.3 dB NF
- 1.7 W - DC
- 5.6 OZ

- IMPROVE NOISE FIGURE
 - REVIEW G / T REQUIREMENT
- GOAL: 1 dB NF

3/10/94

SCAMP BLOCK II TECHNOLOGY (CONTINUED)

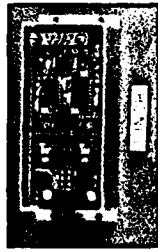
CURRENT TECHNOLOGY

SYNTHESIZER



- 3.4 LBS
- 10 W

POWER CONVERTERS



- 70 - 80% EFFICIENCY
- MULTIPLE VOLTAGES

PRIME MISSION BATTERY



24 V DC, 165W-Hr

OBJECTIVES / GOALS

- REDUCE WEIGHT
- REDUCE POWER CONSUMPTION
- DDS TECHNOLOGY
- LOW POWER OSCILLATORS
MCXO

- GOAL: .5 LBS / 3 WATTS

- REDUCE NUMBER OF CONVERTERS

- REDUCE HIGH POWER LOSS DUE TO
 - INEFFICIENCY
 - USE OF HIGH VOLTAGE

- REDUCE # OF DIFFERENT VOLTAGES

- MAXIMIZE USE OF 3.3 V DEVICES

- IMPROVE EFFICIENCY > 90 %

GOAL:

- > 250 W-Hr PER BATTERY
- NO MORE EXPENSIVE THAN BA-5590

SCAMP BLOCK II TECHNOLOGY (CONTINUED)

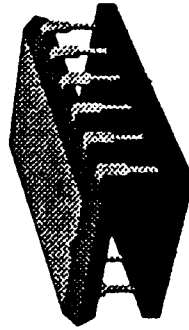
CURRENT TECHNOLOGY

STRUCTURES



- 12.2 LBS

EMBEDDED COMSEC



- RAILMAN MODULE
- 60 mW WHEN ACTIVE
- THRU-HOLE DEVICE

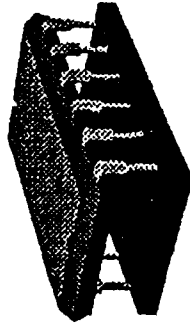
OBJECTIVES / GOALS

- REDUCE WEIGHT
- LIGHTWEIGHT MATERIALS
- REPACKAGING CONCEPTS

- REDUCE SIZE
- POWER REDUCTION NOT WORTH EXPENSE
- REPACKAGE AS SURFACE MOUNT VERSION OF STICKPIN

SCAMP BLOCK II TECHNOLOGY (CONTINUED)

CURRENT TECHNOLOGY EMBEDDED TRANSEC



- CDH MODULE
- 300 - 400 mW WHEN ACTIVE
- THRU-HOLE DEVICE

CONTROL DEVICE



- CURRENT DEVICE 2.5 LBS

OBJECTIVES / GOALS

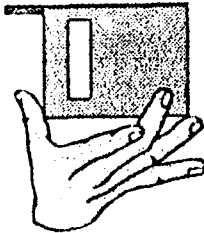
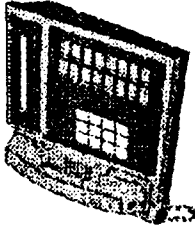
- REDUCE POWER CONSUMPTION
- REDUCE SIZE
- RE-DESIGN AS LOW VOLTAGE (SAVE 40 % IF USE 3.3 V)
- RE-PACKAGE AS SURFACE MOUNT

- REDUCE SIZE
- ENSURE RUGGEDNESS

GOAL: < 1 LB INCLUDING COMSEC

3/10/94

SCAMP BLOCK II TECHNOLOGY (CONTINUED)

CURRENT TECHNOLOGY	OBJECTIVES / GOALS
<p>PAGER</p> 	<ul style="list-style-type: none"> • PROVIDE PAGING CAPABILITY • TECHNOLOGY IS ESSENTIALLY AVAILABLE TODAY. • CECOM SPACE AND TERRESTRIAL COMM INVESTIGATING ALTERNATIVES
<p>VOICE QUALITY</p> 	<ul style="list-style-type: none"> • INCREASE VOICE QUALITY <ul style="list-style-type: none"> • VOICE INTERFACE TO ACUS • HIGHER VOICE QUALITY NSA CONSORTIUM 2.4 Kbps AT 4.8 Kbps QUALITY

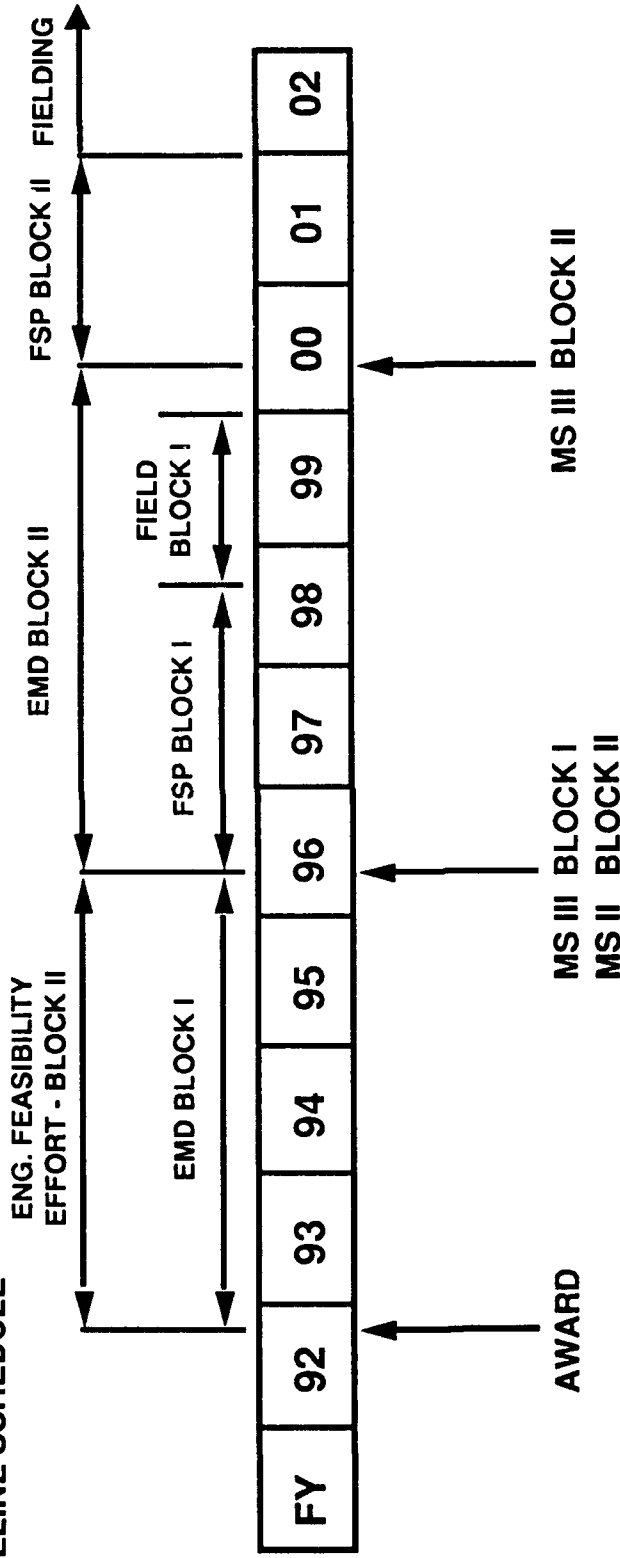
CURRENTLY LPC-10e

BLOCK II STATUS

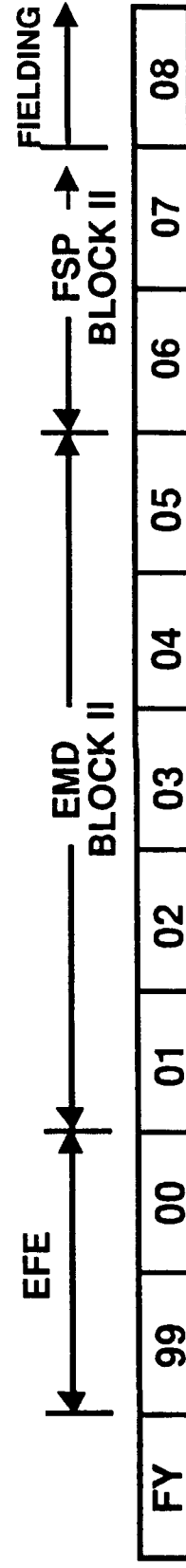
- **PBD 102 EFFECTS ON SCHEDULE**
 - **DELAYS BLOCK II ENGINEERING FEASIBILITY TO 1996**
- **CURRENT PLAN**
 - **FUNDING FOR BLOCK II EMD SCHEDULED TO BE AVAILABLE FY01**
- **NEW SCHEDULE**
 - **SEE NEXT SLIDE**

SCHEDULES

BASELINE SCHEDULE



REVISED BLOCK II SCHEDULE



NOTES

SESSION IV

"OUT-THINK" THE ENEMY

MODERATOR

MR. BENNETT R. HART
DEPUTY PROGRAM EXECUTIVE
OFFICER
COMMAND AND CONTROL
SYSTEMS

SESSION IV
"OUT-THINK" THE ENEMY
OVERVIEW AND INTRODUCTION

MODERATOR: MR. BENNETT HART
DEPUTY PROGRAM EXECUTIVE OFFICER
COMMAND AND CONTROL SYSTEMS

UNCLASSIFIED

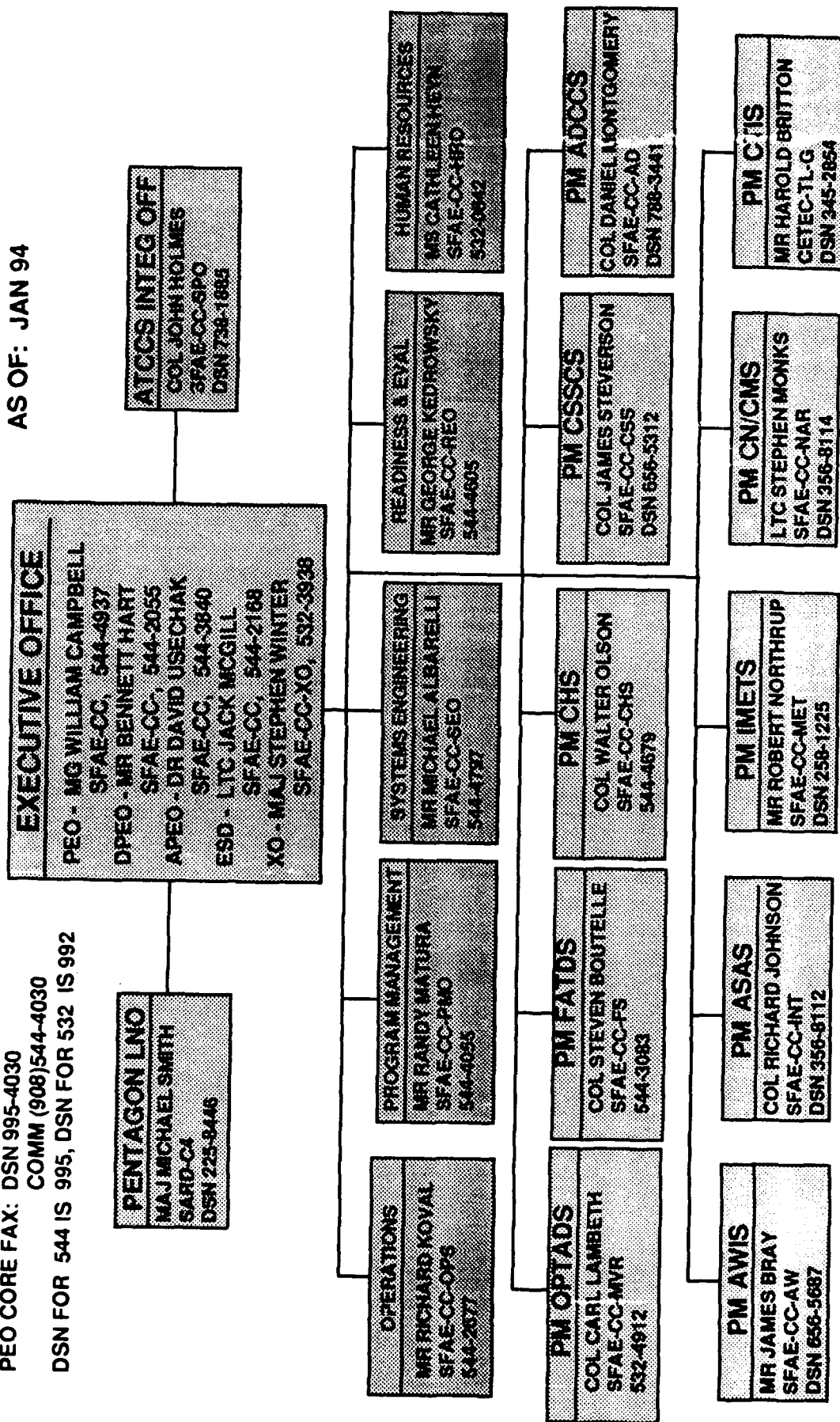
PEO CORE FAX: DSN 995-4030
COMM (908)544-4030
DSN FOR 544 IS 995, DSN FOR 532 IS 992

PEO CORE FAX: DSN 995-4030

COMM (908) 544-4030

DSN FOR 544 IS 995, DSN FOR 532 IS 992

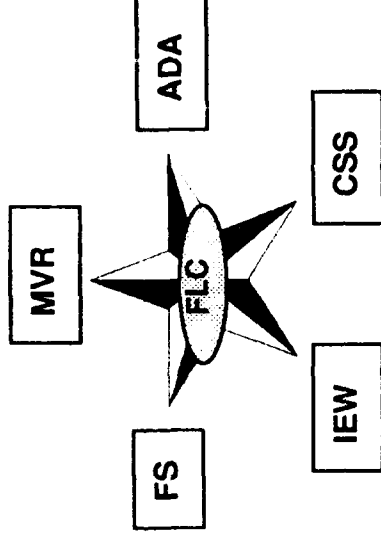
AS OF: JAN 94



ABCS SUPPORT TO THE WARFIGHTER

Integrated Computer
Systems for Commanders
and Their Staff

Graphics Based Maps,
OPLANS, Resources
Status, Courses of Action



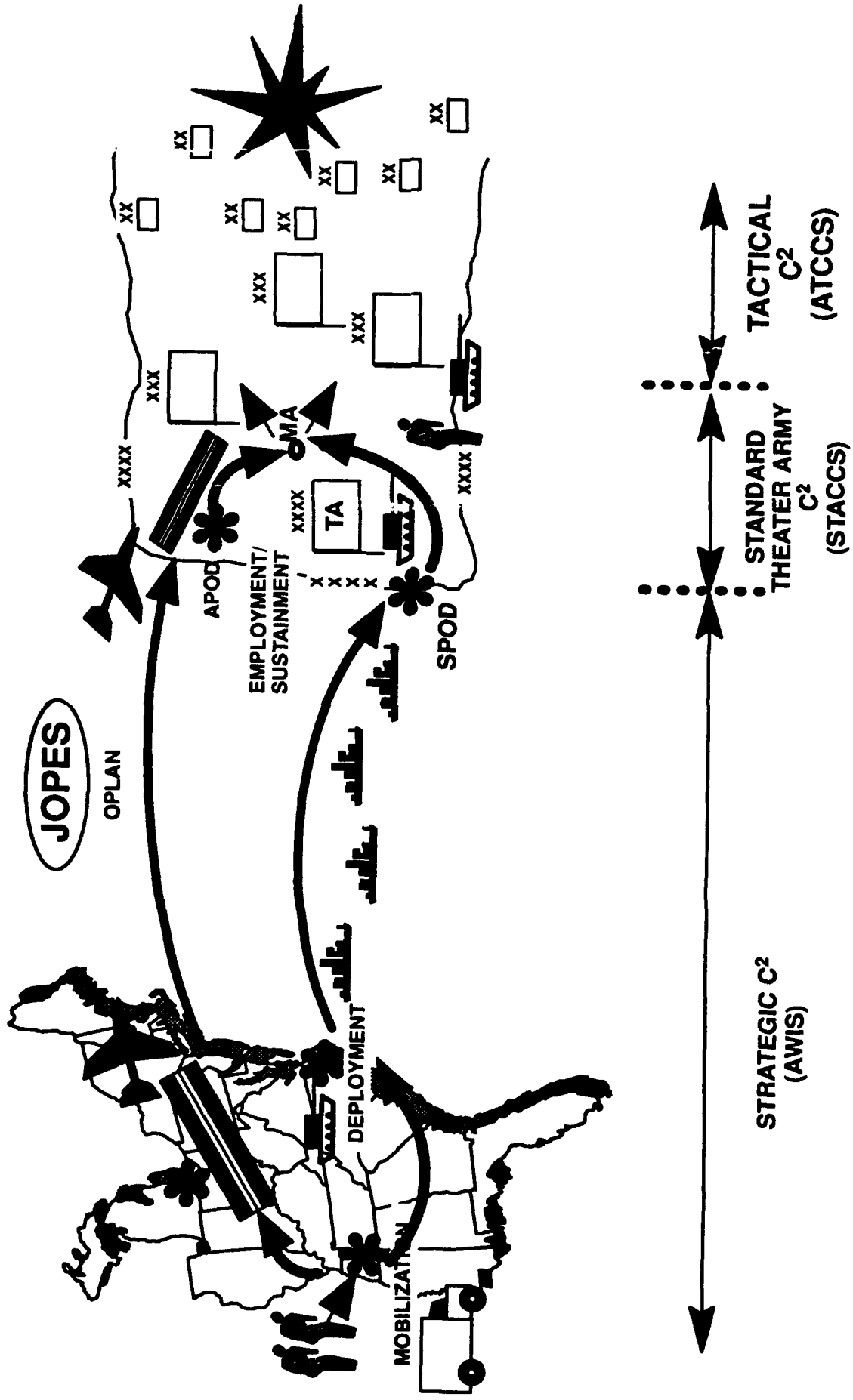
PROVIDING INFORMATION THAT IS:

- Timely
- Accurate
- Available at All Echelons
- Rapidly Disseminated

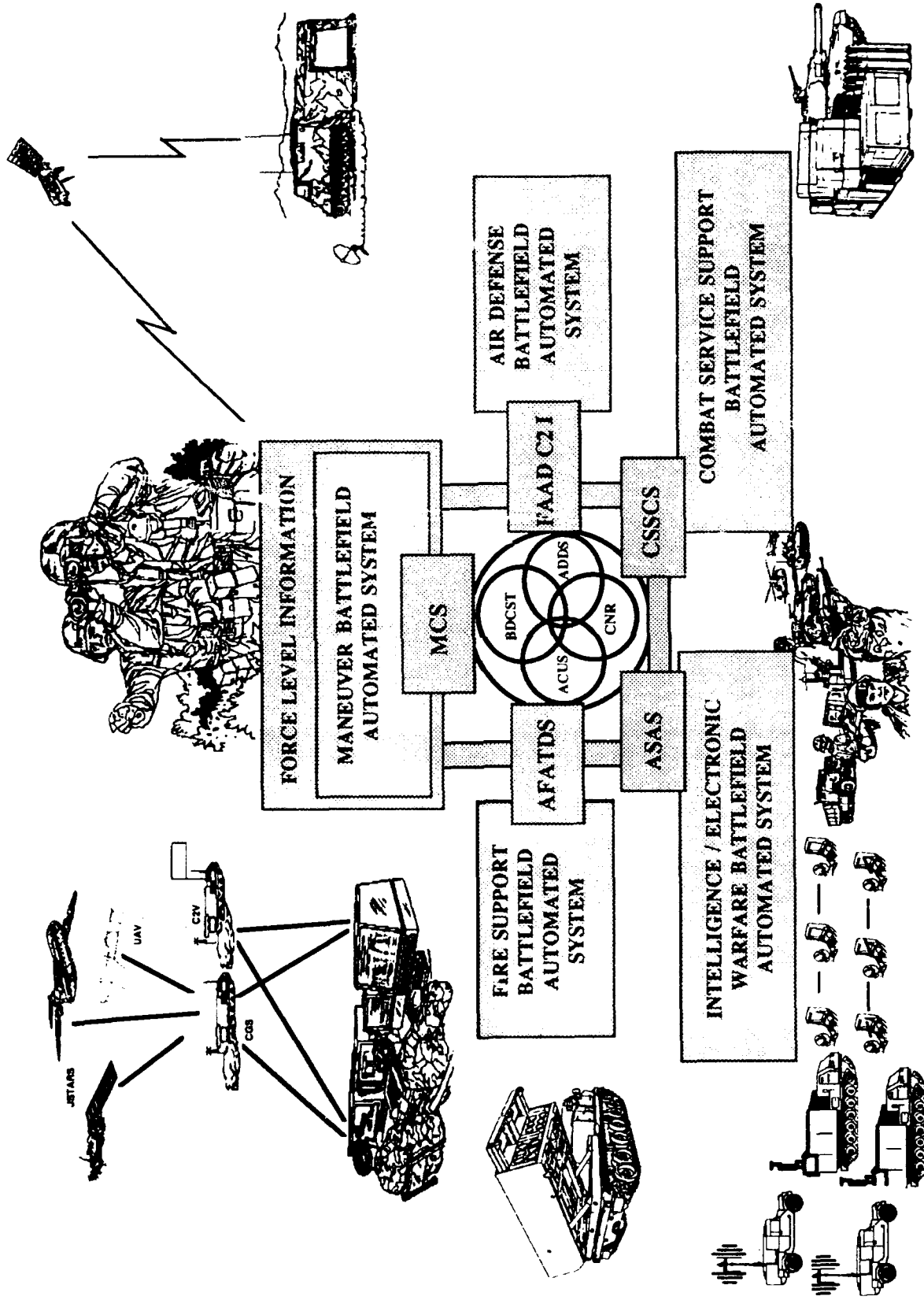
GIVING THE WARFIGHTER

- A "Common Picture of the Battlefield"
- Ability to Get Inside the Enemy's Decision Cycle
- Ability to Better Synchronize All Elements of the Force
- Real Time*, Digitized Command and Control Capabilities

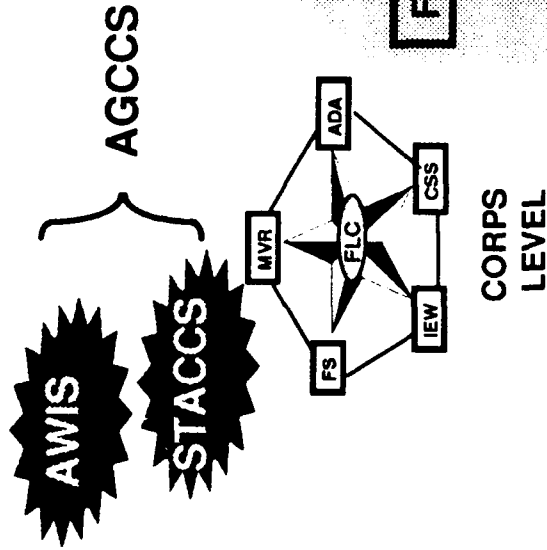
ARMY COMMAND & CONTROL SYSTEM



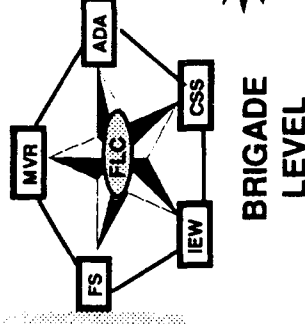
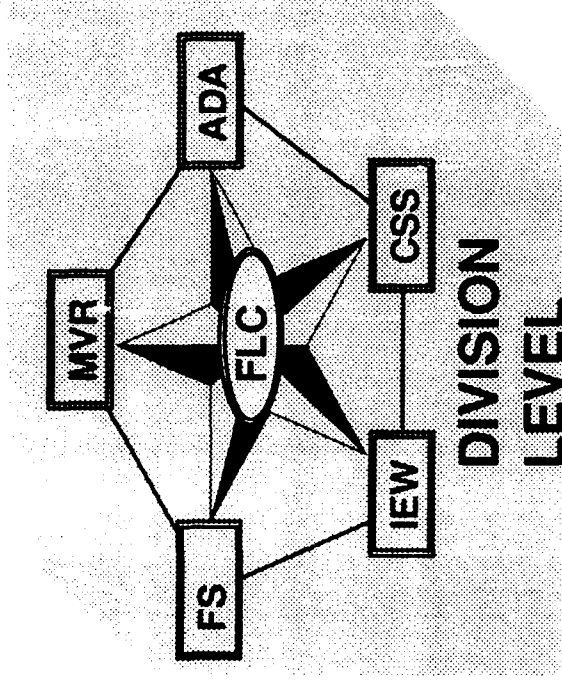
ARMY TACTICAL COMMAND AND CONTROL SYSTEM IN TRANSFORMATION TO THE ARMY BATTLE COMMAND SYSTEM



THE DIGITIZED BATTLEFIELD



Horizontally integrated at each echelon for Force Level Control

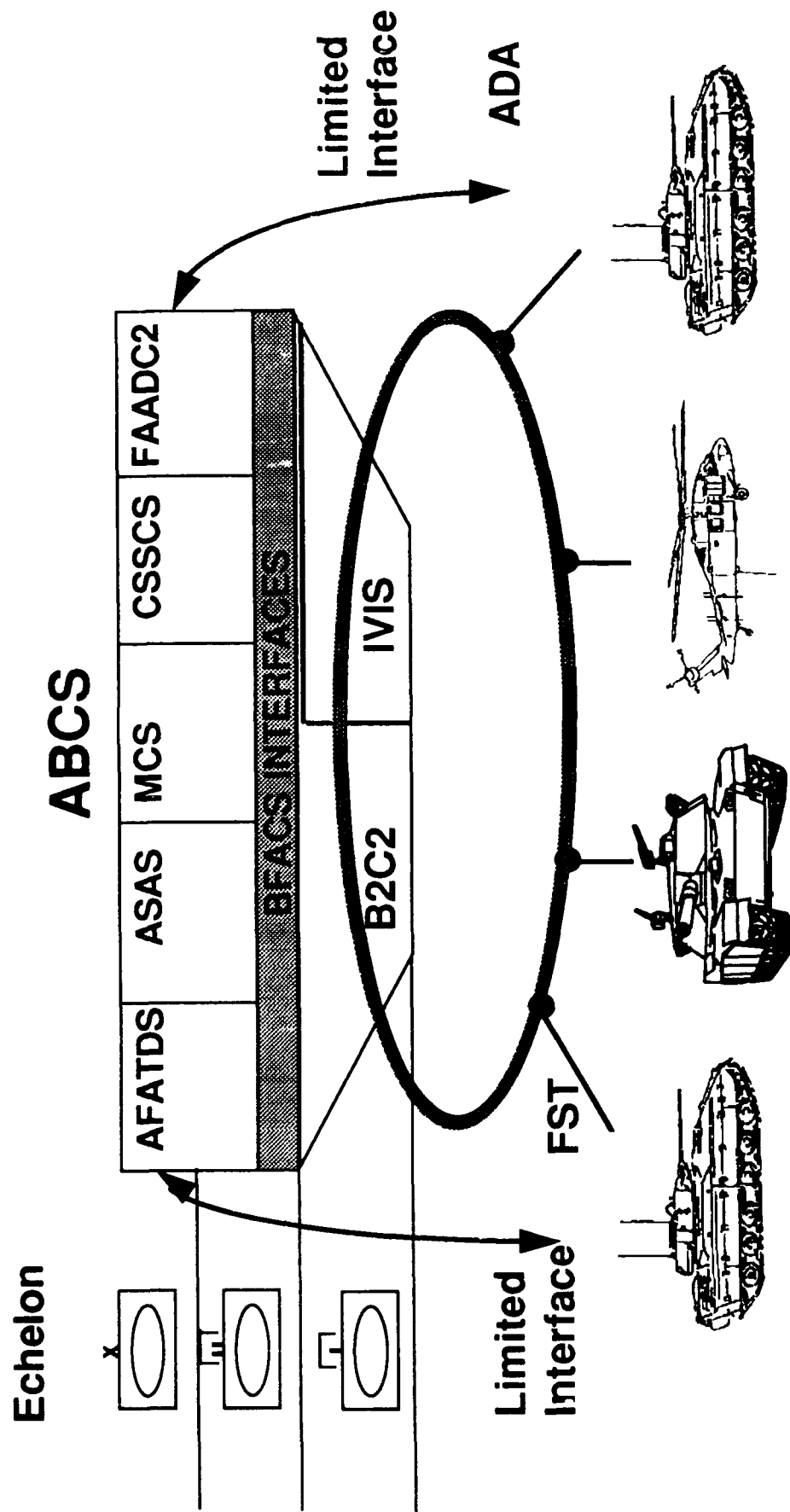


AB2

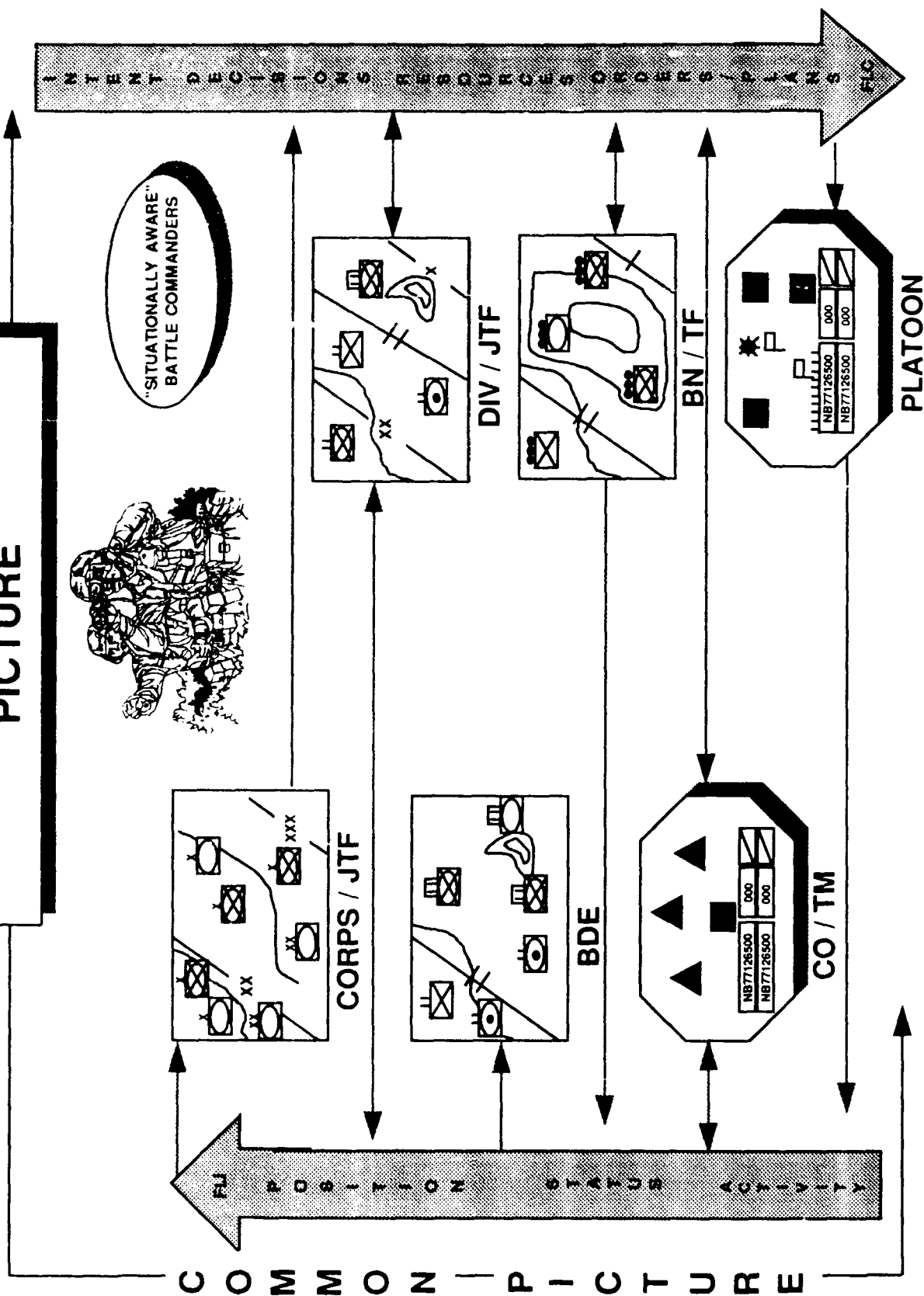
“An interoperable integration of C2 systems that provides Commanders the means to synchronize the forces”

DIGITIZING THE BATTLEFIELD

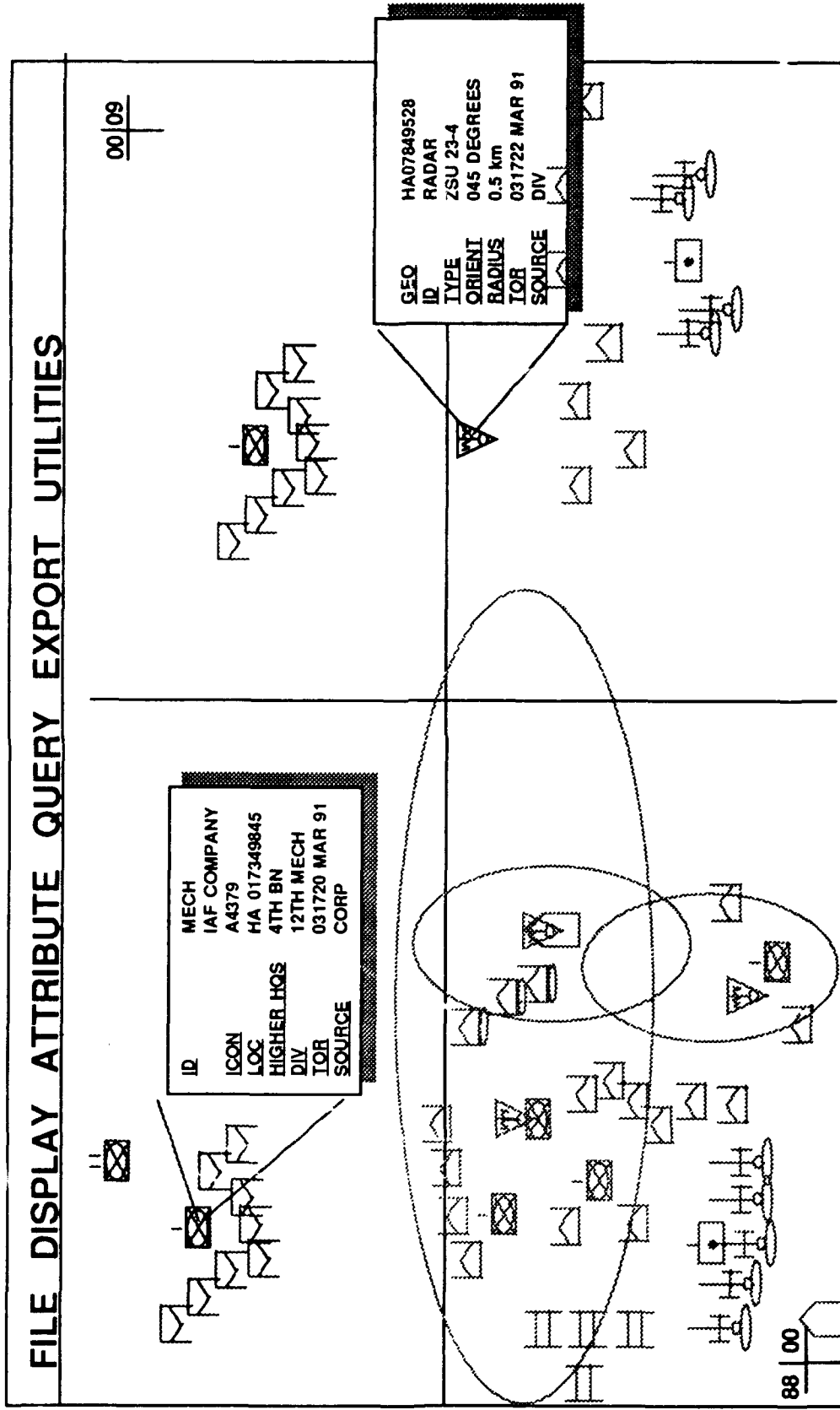
AB2 - Army Brigade & Below



DEFINING THE COMMON PICTURE



GRAPHIC SITUATION DISPLAY OVERLAY



HARDWARE REQUIREMENTS

EMBEDDED /
COMMON
HARDWARE

TYPE UNIT APPLIQUE

AR BDE 96 (600) (308) (292)

AR DIV 97 (2437) 1275 1162

Includes BDE 96

AR DIV 98 (2437) 1005 1432

AASLT DIV (1908) 701 1207

ABN DIV (1783) 640 1143

INF DIV (1651) 589 1062

CORPS 99 (1625) 1306 319

TOTAL (11,841) 5516 6325

SESSION IV BRIEFINGS

COMMAND AND CONTROL OVERVIEW MR. BENNETT HART

**BATTLEFIELD DIGITIZATION
PROTOCOL SUITE**

DR. MYRON HOLINKO

**ARMY GLOBAL COMMAND
& CONTROL SYSTEM**

LTC DAVID KIRKS

MANEUVER CONTROL SYSTEM MR. PETER JOHNSON

**C3 TECHNOLOGY ENGINEERING
& INTEGRATION**

MR. ROBERT CARNEVALE

NOTES

ARMY GLOBAL COMMAND AND CONTROL SYSTEM



LTC DAVID J. KIRKS
PRODUCT MANAGER, SACCS
PROJECT MANAGEMENT OFFICE, AWIS

UNCLASSIFIED

POINT PAPER

SUBJECT: Army Global Command and Control System (AGCCS)

OBJECTIVE: The AGCCS procurement will acquire support to engineer, develop, integrate, and maintain software in support of a consolidated AGCCS project. The projects to be consolidated, the Army WWMCCS Information System (AWIS), Standard Theater Army Command and Control System (STACCS), and Combat Service Support Control System (CSSCS), will be combined to enhance interoperability, ensure software and technology reuse, and to minimize duplication between systems. The consolidated development effort will reduce product delivery time, eliminate development and duplication of functional software products supporting Army command and control systems, and maintain the required functionality for mission success. AGCCS will provide a source of technical support and services in support of the Army component of the GCCS in fielding a seamless C2 structure for the echelons-above-corps Army. This acquisition will include development of the AGCCS core platform; reuse of functional capability software modules currently existing in the AWIS, STACCS and CSSCS environments; integration of these modules; maintenance of the existing systems; and development and maintenance of new functional capabilities.

FACTS: To accomplish the objective, some of the technologies required are the following:

- Ada software development and code reuse
- Rapid prototyping and development tools
- Software quality metrics
- Compatibility with CASS, CHS-I/II products, and GCCS
- Relational database management
- Commercial and tactical communications interfacing

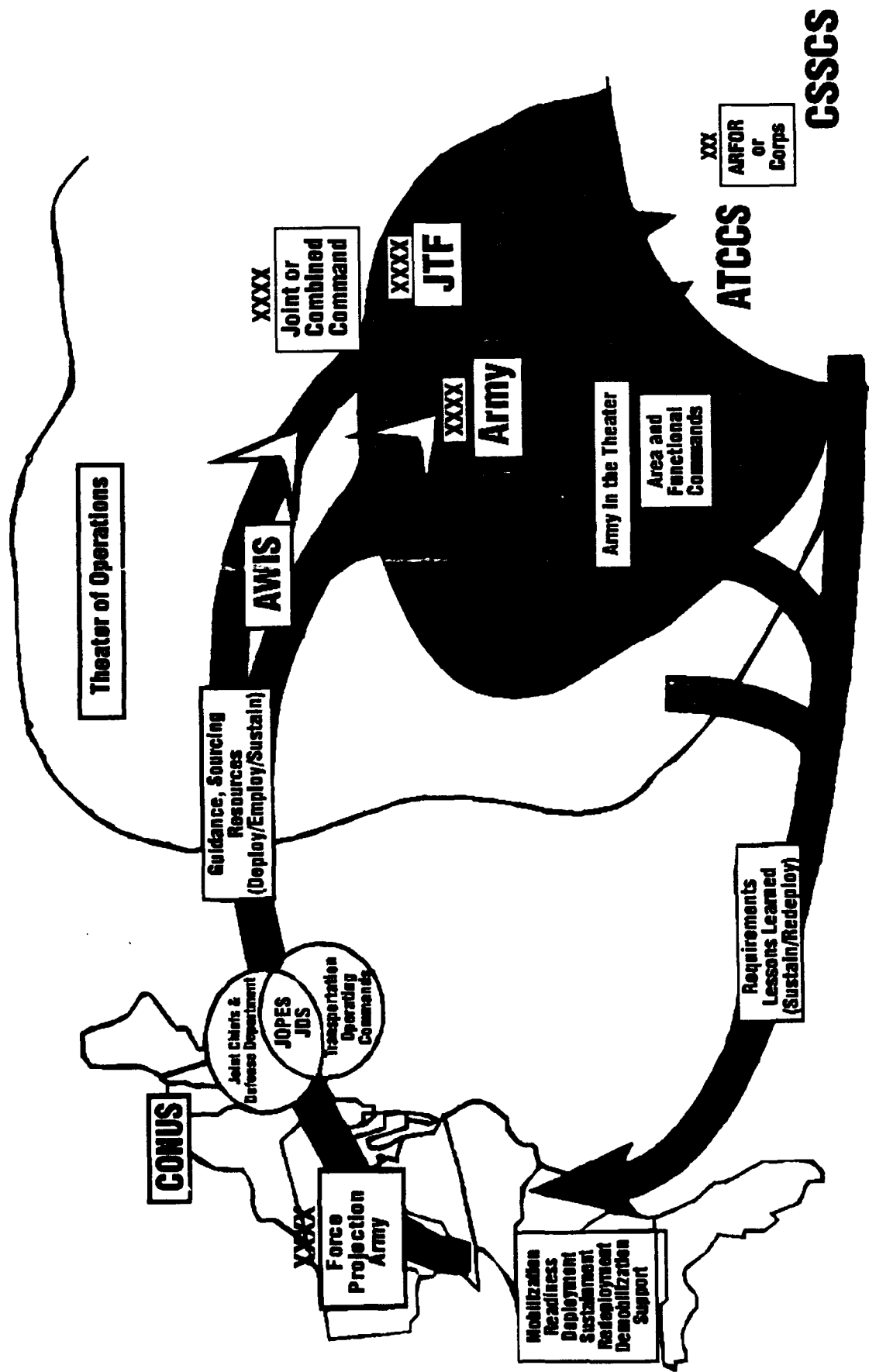
Some of the required benefits will be:

- Improved interoperability
- Operational flexibility
- Common picture of C2 information at all echelons
- Transition to common hardware
- Reduced life cycle costs

BRIEFER: LTC David J. Kirks
Product Manager, SACCS
PMO, AWIS
(703)-968-1266

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

INFORMATION BRIDGE



ARMY GLOBAL COMMAND AND CONTROL SYSTEM

STRATEGY

TO PROVIDE SYNCHRONIZATION AND
CONSOLIDATION OF THE AWIS, STACCS AND
EAC CSSCS ACQUISITION IN ORDER TO
ENHANCE INTEROPERABILITY, ENSURE
SOFTWARE AND TECHNOLOGY REUSE, AND
MINIMIZE DUPLICATION BETWEEN SYSTEMS

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

SYSTEM OVERVIEW

AWIS

- STRATEGIC LEVEL C2 SYSTEM SUPPORTING MOBILIZATION, DEPLOYMENT, EMPLOYMENT AND SUSTAINMENT OF THE FORCE
- SUPPORTS NCA, UNIFIED & SPECIFIED COMMANDS, ARMY COMPONENTS, TRANSPORTATION OPERATING AGENCIES AND HQDA
- MODERNIZE ARMY COMMAND/SUPPORTED SITES WITH C2 SOFTWARE, HARDWARE AND COMMUNICATIONS
- INTERFACE WITH JOINT STRATEGIC AND ARMY THEATER LEVEL SYSTEM

STACCS

- AT THEATER COMMANDS AND THEIR MAJOR SUBORDINATE COMMANDS
- HAS MULTIPLE COMMON REPLICATED DATABASES WITH COMMON SITMAPS, COMMUNICATIONS, MAN-MACHINE INTERFACES, BRIEFING SYSTEM AND COTS
- UTILIZES COMMERCIAL AND MILITARY COMMUNICATIONS
- INTERCONNECTS TO STRATEGIC (AWIS) AND TACTICAL (MCS) LEVELS

EAC CSSCS

- ASSIST THE COMMANDERS AND THEIR STAFFS IN PLANNING AND EXECUTION OF LOGISTICS OPERATIONS
- PROVIDE TIMELY SITUATIONAL AWARENESS AND FORCE PROJECTION TO DETERMINE CAPABILITY TO SUPPORT CURRENT OPERATIONS AND SUSTAINED FUTURE OPERATIONS
- EXCHANGE INFORMATION WITH OTHER AUTOMATED SYSTEMS (ATCCS/STAMIS/JOINT) AND ECB CSSCS SYSTEMS

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

OBJECTIVES

- **INTEGRATED ACQUISITION OF AWIS/EAC CSSCS/STACCS**
- **PREVENT OVERLAP OR DUPLICATION**
- **CAPITALIZE ON THE BENEFITS IN HARDWARE EFFICIENCIES AND SOFTWARE REUSE -- INTRODUCE COMMON ABCS SUPPORT SOFTWARE**
- **DEVELOP COMMON DATA WITH STANDARD NAMES AND DEFINITIONS**
- **CAPITALIZE ON OPPORTUNITIES FOR FUNCTIONAL INTEGRATION/VERTICAL FLOW OF TACTICAL / THEATER / STRATEGIC C2 APPLICATIONS**
- **PROVIDE SOFTWARE MAINTENANCE AND MODIFICATIONS OF EXISTING BASELINES**
- **MAXIMIZE RETURN ON INVESTMENT**
- **PROVIDE INTEROPERABILITY AND "BEST OF BREED" PRODUCTS**

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

NEEDED TECHNOLOGIES

- **ADA SOFTWARE DEVELOPMENT AND CODE REUSE**
- **RAPID PROTOTYPING AND DEVELOPMENT TOOLS**
- **CLIENT SERVER**
- **OPEN SYSTEMS AND LAYERED ARCHITECTURE**
- **SOFTWARE QUALITY METRICS**
- **RELATIONAL DATABASE MANAGEMENT**
- **COMPATIBLE WITH CASS, CHS I & II PRODUCTS, AND GCCS**
- **MULTI-LEVEL SECURITY**
- **COMMERCIAL & TACTICAL COMMUNICATIONS INTERFACE CAPABILITIES**

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

BENEFITS

- **IMPROVED INTEROPERABILITY**
- **OPERATIONAL FLEXIBILITY**
- **COMMON PICTURE OF C2 INFORMATION AT ALL ECHELONS**
- **TRANSITION TO COMMON ARCHITECTURE**
- **REDUCE LIFE CYCLE COSTS**

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

MILESTONES

RELEASED DRAFT RFP	FEB 94
RELEASE RFP	MAY 94
PROPOSALS DUE	JUL 94
REQUEST BAFOS	NOV 94
CONTRACT AWARD	DEC 94

ARMY GLOBAL COMMAND AND CONTROL SYSTEM

CONTRACT OPPORTUNITY

TITLE: ARMY GLOBAL COMMAND & CONTROL SYSTEM

OBJECTIVE: SOFTWARE INTEGRATION AND DEVELOPMENT

**SCOPE: DEFINE, DESIGN, DEVELOP, DOCUMENT, DEPLOY,
MAINTAIN AND TRAIN FULLY OPERATIONAL C2 SYSTEM TO
MEET ARMY REQUIREMENTS**

**TYPE: CPAF 5 YEARS -- FOR SOFTWARE INTEGRATION AND
DEVELOPMENT**

FFP -- FOR MAINTENANCE OF EXISTING SOFTWARE

CONTRACTING AGENCY: USAISSAA

**STATUS: DRAFT RFP RELEASED FEB 94, RFP DUE OUT MAY 94
(VIA ELECTRONIC BULLETIN BOARD)**

SCHEDULE: EXPECTED AWARD FY95

APPROX. VALUE: \$135M - \$175M

POC: LTC DAVID J. KIRKS, (703) 968-1266

NOTES

MANEUVER CONTROL SYSTEM VERSION 12

**MR. PETER JOHNSON
PRODUCT MANAGER MCS/CHS
PM OPERATIONS TACTICAL DATA SYSTEMS/PEO CCS**

UNCLASSIFIED

POINT PAPER

SUBJECT: Maneuver Control System (MCS)

OBJECTIVE: The MCS is a tactical computer network that will provide automated command and control for commanders and staffs. It will operate from corps through platoon/section.

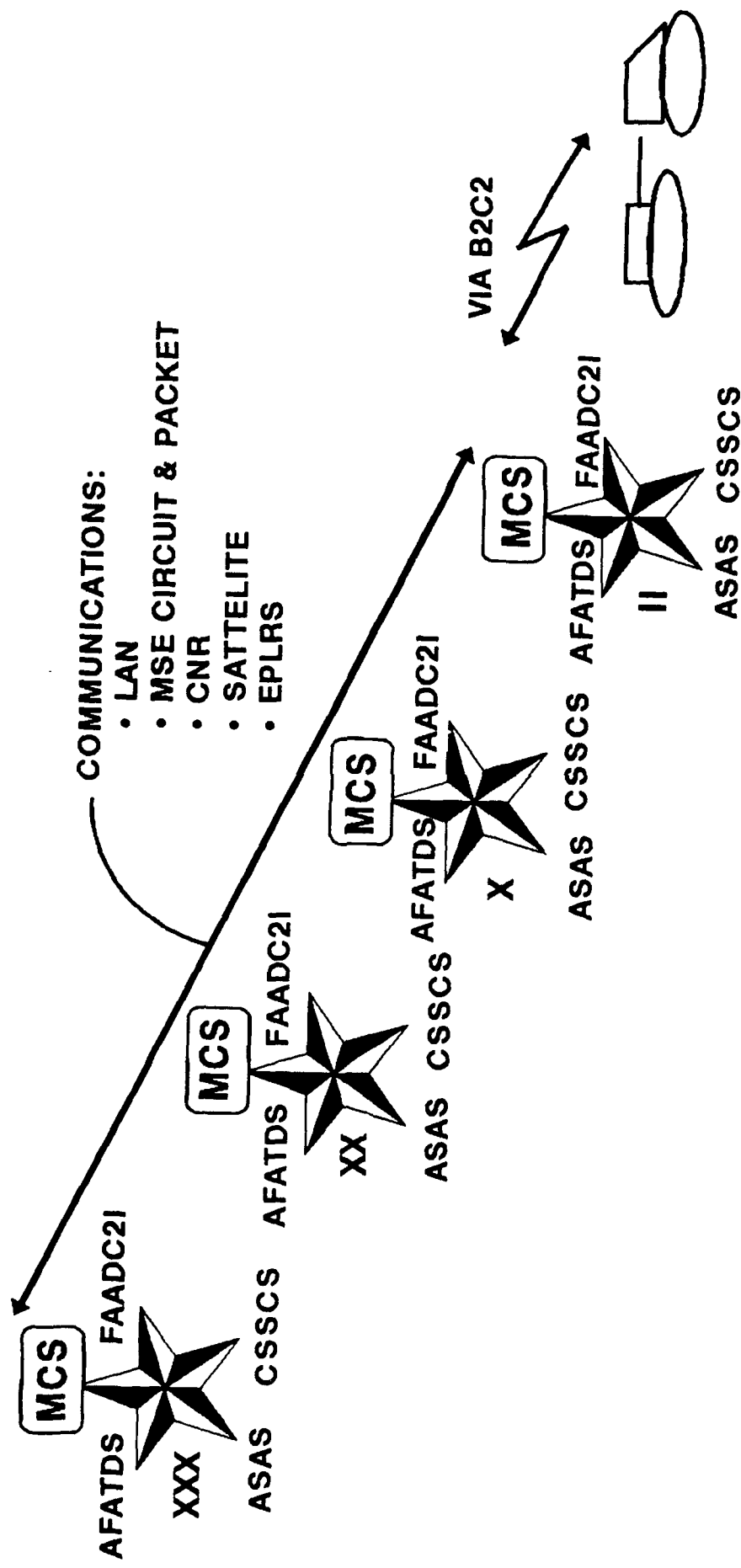
FACTS: The MCS will provide: graphical visualization of the digitized battlefield, operations plans and orders, location and resource status of friendly and enemy units, enemy intent, and application tools for staff elements. The MCS architecture is based upon an open system four-layer model, with a flexible and modular structure. The MCS technical concept employs software reuse, common hardware and software, commercial products, and prototyping. Three software versions will be developed, each providing additional functional capabilities in software for the common operating environment, applications, and communications.

BRIEFER: Mr. Peter Johnson
Product Manager, MCS/CHS
PMO, OPTADS

MANEUVER CONTROL SYSTEM DESCRIPTION

- **TACTICAL COMPUTER NETWORK**
- **AUTOMATE COMMAND AND CONTROL FOR
COMMANDERS AND STAFFS**
 - GRAPHICAL VISUALIZATION OF THE DIGITIZED BATTLEFIELD
 - OPERATIONS PLANS AND ORDERS
 - LOCATION OF FRIENDLY AND ENEMY UNITS
 - RESOURCE STATUS OF FRIENDLY AND ENEMY UNITS
 - ENEMY INTENT
 - APPLICATION TOOLS FOR STAFF ELEMENTS
- **CORPS THROUGH PLATOON/SECTION**
- **ACQUISITION CATEGORY 1D PROGRAM**

MANEUVER CONTROL SYSTEM OPERATIONAL CONCEPT



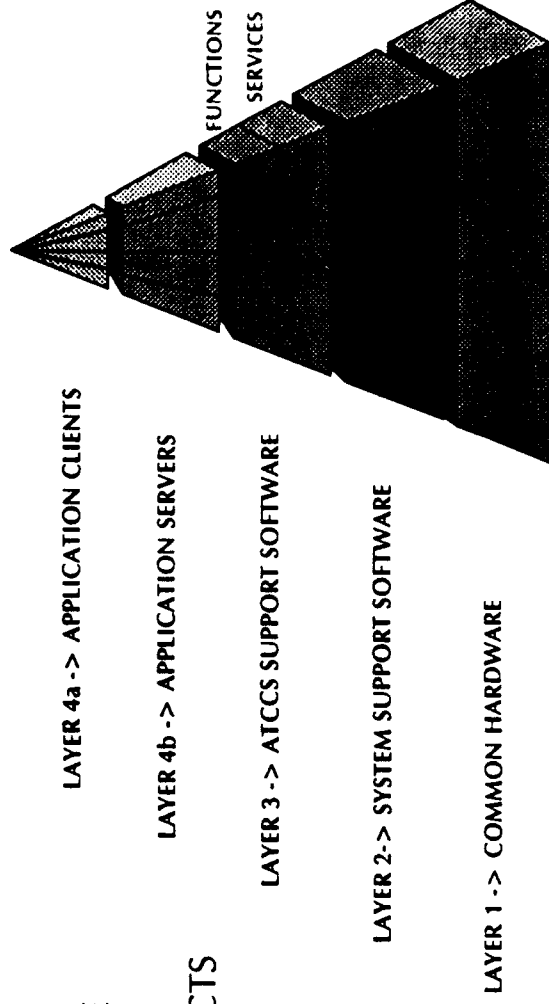
MANEUVER CONTROL SYSTEM TECHNICAL CONCEPT

■ ARCHITECTURE

- 4 LAYER MODEL
- OPEN SYSTEM
- CLIENT SERVER
- DCE/DME BASED
- DISTRIBUTED RELATIONAL DATABASE
- FLEXIBLE AND MODULAR STRUCTURE

■ PROCESS

- SOFTWARE REUSE
- COMMON HARDWARE
- COMMON SOFTWARE
- COMMERCIAL PRODUCTS
- PROTOTYPING
- SPIRAL DEVELOPMENT



MANEUVER CONTROL SYSTEM SOFTWARE FUNCTIONALITY REQUIREMENTS V12.1 (FROM BLOCK IV RFP)

V12.1 COE

Common Hardware-2 Platform
Common ABCS Support Software
Distributed Computing Environment
Distributed Management Environment
Integrated Office Package (IOP)
MS-DOS/Windows/MAC Emulation
Embedded Training (w/Help)
System Management and Administration
Security-System High-US Secret
Continuity of Operations
Messaging Capability
Staff Journal with Message Log Linkage
Predefined Queries
User Defined Forms Generator
Transfer DOS/WIN/MAC, IOP, Form Generator Files
E-Mail
Briefing Support

V12.1 Applications

Operations Plans and Orders
Terrain Evaluation
Battlefield Geometry and Overlay Management
Friendly Task Organization
Tactical Movement Control
AB2
Secondary Imagery Information
Display Intelligence Preparation of the Battlefield Products
Intelligence Summary Information
Intelligence Appraisal Information
Unit Readiness Status and Reporting
General Supply Status Reporting

V12.1 Communications

IEEE 802.3 ThinLAN
FDDI LAN
MSE Packet Network-LAN
MSE Packet Network-X.25
MSE Circuit Switched Network
SINCGARS
STU-III over Commercial Phone Networks
Satellite Network
EPLRS
Non Secured Commercial Switched Networks
Direct Wire Connection
Receive Information from GPS

EACH VERSION OF
SOFTWARE IS INCLUSIVE
OF ALL FUNCTIONALITY
IN THE PREVIOUS VERSION(S)

MANEUVER CONTROL SYSTEM SOFTWARE FUNCTIONALITY REQUIREMENTS V12.2 (FROM BLOCK IV RFP)

V12.2 COE Updates

Embedded Training (w/Help) updates
User-Defined Queries
Standing Request for Information Mgmt
Multi-Media Input Functions
Multiple Display Devices
Multiple Printers and Plotters
Telestrator/LightPen Capability
Internet Routing Services
Remote Log-In

V12.2 Applications

Course of Action Analysis
NBC Information
Battle Command Decision Support
Civil Military Coordination (CIMIC) and Ops (CMO)
Strategic Mobility and Movement
Tactical Engineer Information
Display Enemy Order of Battle
Display Weather Information
Maintenance Status and Reporting
General Supply Requirements Forecasting
Air Tasking Order Information
Air Coordination Order Information

V12.2 Communications

Defense Data Network
AUTODIN and Defense Messaging System
QIP Gateway
Appendix I, Message Table 90.1-2

EACH VERSION OF
SOFTWARE IS INCLUSIVE
OF ALL FUNCTIONALITY
IN THE PREVIOUS VERSION(S)

MANEUVER CONTROL SYSTEM SOFTWARE FUNCTIONALITY REQUIREMENTS V12.3 (FROM BLOCK IV RFP)

V12.3 COE Updates

Embedded Training (w/Help) updates
Security-82 MLS-US Secret & Nato
Natural Language Queries
Scanner Input
Voice Interaction
Foreign Language Translation

V12.3 Applications

SOF and PSYOP Planning and Operations
Command and Control Warfare (C2W)
Military Police Information
Signal Operations Support
Mobility, Counter Mobility and Survivability Functions
Theater Engineer Information
Counter-Intelligence Planning and Operations
Personnel Status Information
Medical Situation Information
Target Analysis and Engagement Information
Fire Support Targeting Information
Air Defense Warning and Alert Information

V12.3 Communications

Appendix I, Message Table 90.1-3
Exchange with Simulation Systems (CBS)

EACH VERSION OF
SOFTWARE IS INCLUSIVE
OF ALL FUNCTIONALITY
IN THE PREVIOUS VERSION(S)

MANEUVER CONTROL SYSTEM CONTRACT OPPORTUNITY

MCS BLOCK IV:

SOLICITATION # DAAB07-94-R-E205
RFP AVAILABLE ON ELECTRONIC
BULLETIN BOARD

OBJECTIVE:

C2 SOFTWARE DEVELOPMENT & INTEGRATION
SYSTEM ENGINEERING & INTEGRATION

CONTRACT TYPE:

COST PLUS INCENTIVE FEE, 5 YEARS
INCREMENTALLY FUNDED
TIME & MATERIALS PROVISIONS

KEY MILESTONES (tentative): RFP RELEASE - AUGUST 1994
AWARD - APRIL 1995

VALUE (estimated):

\$60 - \$90 M

POC = CPT JOHN LeGRANDE, CONTRACTING
OFFICER, 908-532-4435

NOTES

C3 TECHNOLOGY ENGINEERING & INTEGRATION

**MR. ROBERT CARNEVALE
MANAGER, ATCCS SE&I PROGRAM
PROGRAM EXECUTIVE OFFICE
COMMAND & CONTROL SYSTEMS
(PEO-CCS)**

UNCLASSIFIED

POINT PAPER

SUBJECT: C3 TECHNOLOGY, ENGINEERING & INTEGRATION

OBJECTIVE: Provide integrated and effective development of command, control and communications systems across all phases of the system acquisition life cycle. Utilizing a single integrator concept, combine the technology, engineering and system integration requirements for the Program Executive Office for Command and Control Systems (PEO-CCS) and the Communications Electronic Command, Research, Development, and Engineering Center (CECOM-RDEC).

FACTS: In order to fulfill these requirements the C3 Technology, Engineering and System Integrator will need to provide support in the following areas:

- Research, Development for Command, Control and Communications, and platform/system technology and integration
- Command, Control and Mission planning technologies
- Navigation technologies/air traffic control technologies
- Test support
- Tech Base systems engineering & technical assistance
- Program Management
- Experimentation/Demonstration
- Logistics
- Army Global Command and Control System (AGCCS) System Engineering
- Army Tactical Command & Control Systems (ATCCS) /Army Battle Command System (ABCS) System Engineering
- Army Brigade and Below (AB2) System Engineering
- Field Office/Remote Site Support
- Configuration Management
- Application of Military Command, Control and Communications technologies
- Transitioning of Command, Control and Communications technologies into fielded systems
- Support to C3 Program Managers
- Modeling & Simulation
- Support Advanced Technology Demonstrations (ATD's)
- Liaison with TRADOC and Battle Labs
- Laboratory Support

BRIEFER: Mr. Robert Carnevale
Program Executive Office
Command and Control Systems
(908) 532-0161

C3 TECHNOLOGY ENGINEERING & INTEGRATION

DESCRIPTION

THE C3 TE&I CONTRACT WILL PROVIDE A SINGLE INTEGRATOR, WHO WILL BE RESPONSIBLE FOR THE EFFECTIVE DEVELOPMENT AND ACQUISITION OF COMMAND , CONTROL AND COMMUNICATIONS SYSTEMS ACROSS ALL PHASES OF THE LIFE CYCLE, FROM RESEARCH & DEVELOPMENT THROUGH SYSTEM FIELDING

C3 TECHNOLOGY ENGINEERING & INTEGRATION

THE PEO-CCS AND THE CECOM, DIRECTOR RESEARCH & DEVELOPMENT ENGINEERING CENTER (RDEC) HAVE ENTERED INTO A COOPERATIVE AGREEMENT WHICH WILL:

- (1) FOSTER AND FURTHER THE TEAM FORT MONMOUTH APPROACH TO DEVELOPING AND ACQUIRING SYSTEMS FOR SOLDIERS IN THE FIELD**
- (2) ENSURE A SINGLE INTEGRATOR CONCEPT AND UNITY OF VISION ACROSS BOTH ORGANIZATIONS AND THROUGHOUT ALL PHASES OF THE ACQUISITION LIFE CYCLE**

IMPLEMENTATION OF THIS AGREEMENT WILL COMBINE THE HIGH TECHNOLOGY AND SYSTEM INTEGRATION CONTRACTS SUPPORTING BOTH ORGANIZATIONS.

C3 TECHNOLOGY ENGINEERING & INTEGRATION

PARTICIPATING ORGANIZATIONS

PRIMARY USERS

- PEO-COMMAND & CONTROL SYSTEMS
- COMMAND/CONTROL & SYSTEMS INTEGRATION DIRECTORATE (C2SID)
- SPACE & TERRESTRIAL COMMUNICATIONS DIRECTORATE (S&T)

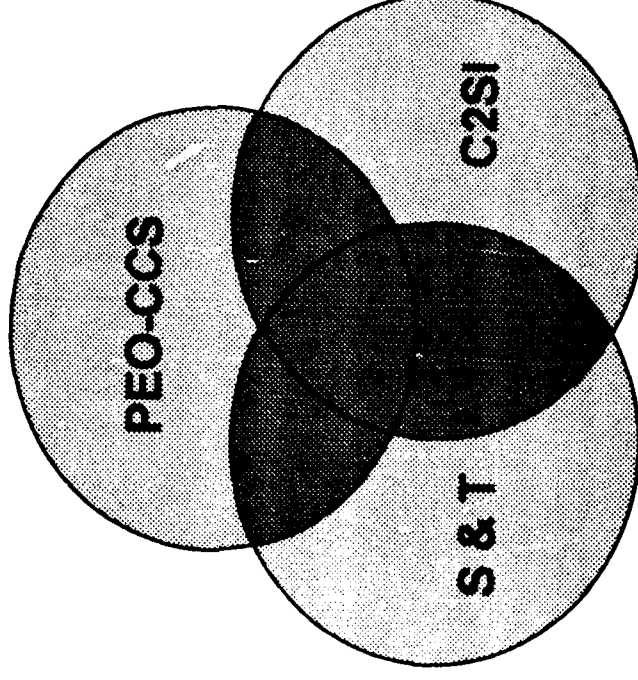
SECONDARY USERS

- PEO-COMMUNICATIONS • COMBINED ARMS CENTER (CAC)
- PEO PM'S • SIGNAL CENTER

C3 TECHNOLOGY ENGINEERING & INTEGRATION

MERGING REQUIREMENTS

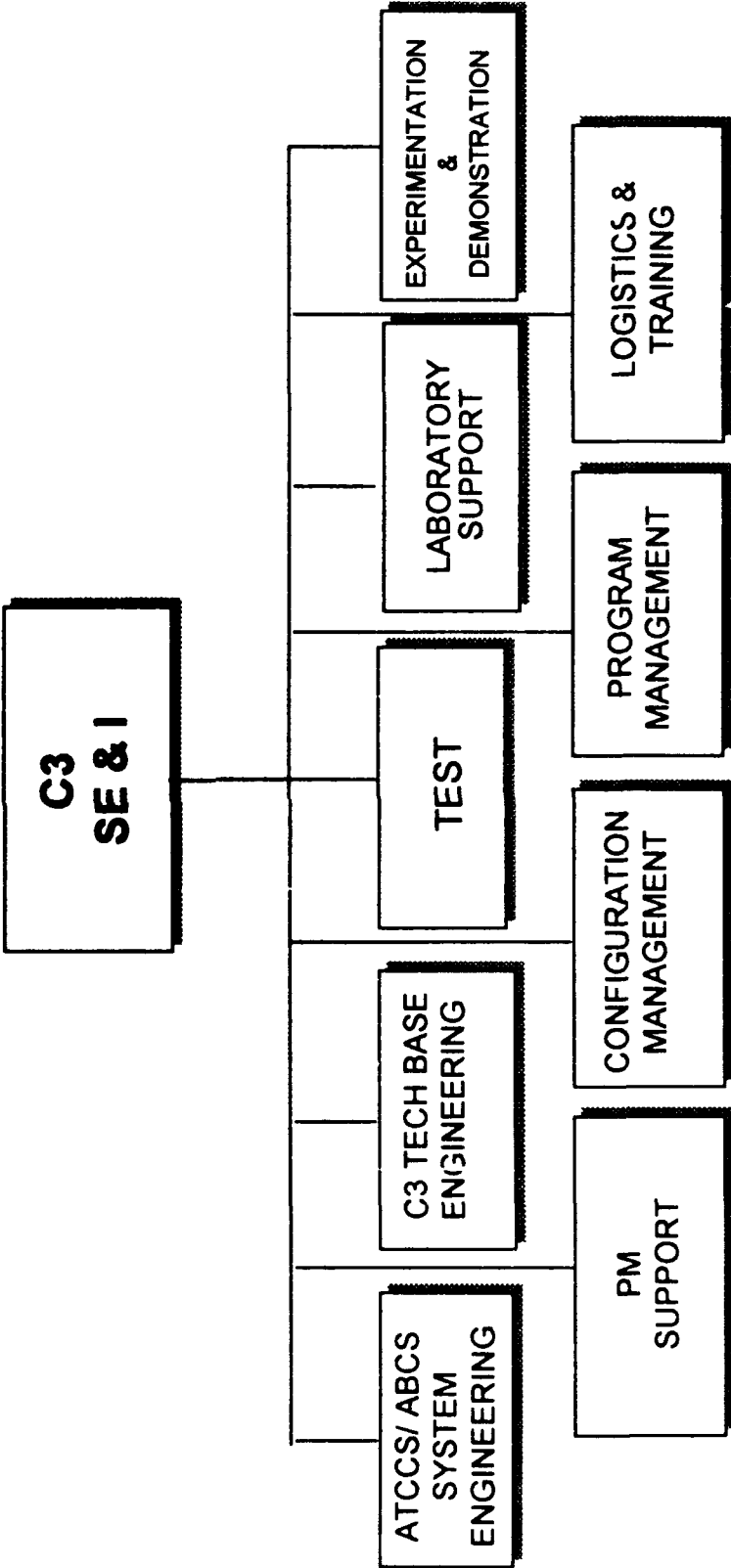
- PEO-CCS ATCCS SYSTEM ENGINEERING & INTEGRATION CONTRACT



- SPACE & TERRESTRIAL COMMUNICATIONS DIRECTORATE (S&T) (HIGH TECH CONTRACT)
- COMMAND/CONTROL & SYSTEMS INTEGRATION DIRECTORATE (C2SID) (HIGH TECH CONTRACT)

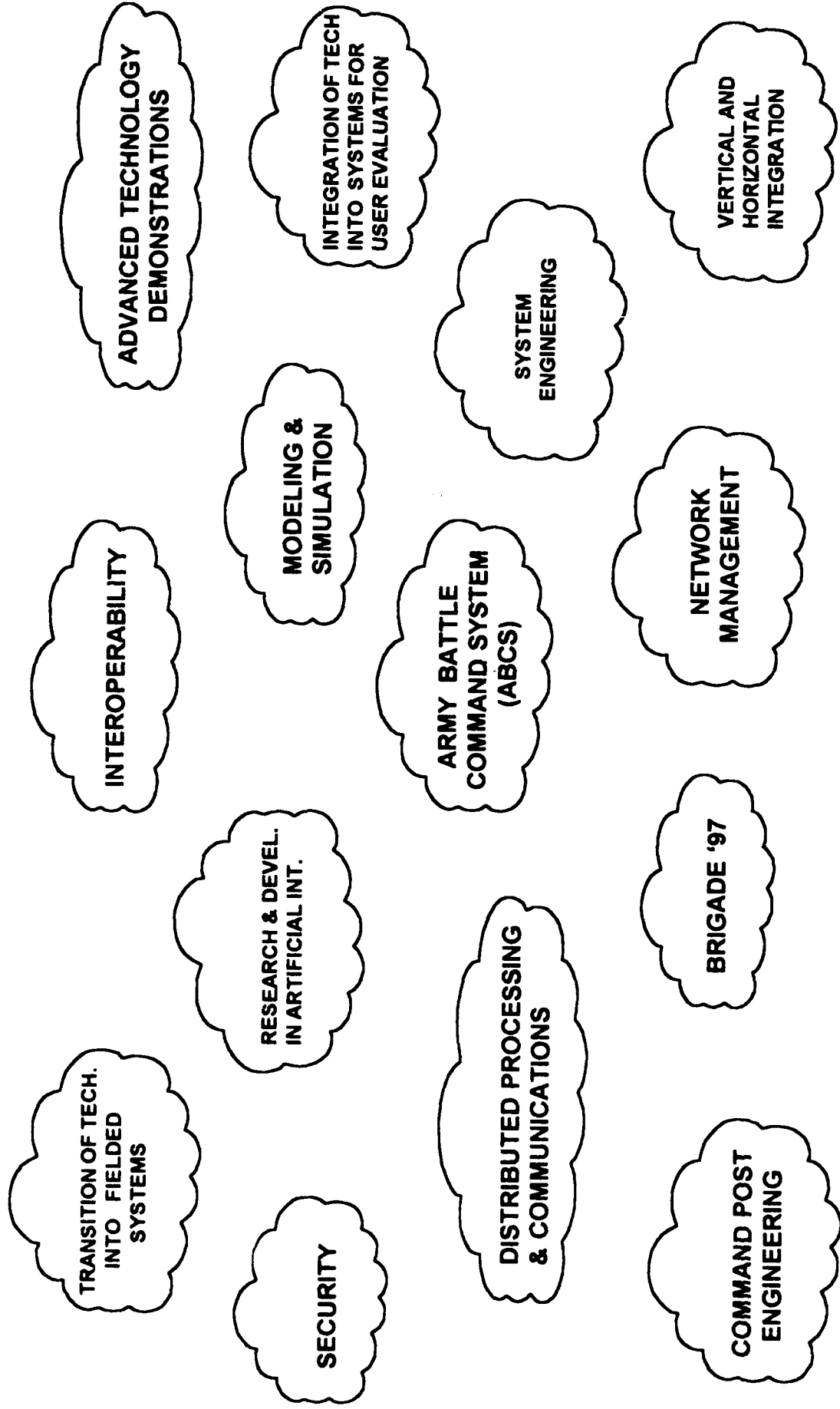
C3 TECHNOLOGY ENGINEERING & INTEGRATION

TYPICAL AREAS OF INTEREST



C3 TECHNOLOGY ENGINEERING & INTEGRATION

SAMPLE REQUIREMENTS



C3 TECHNOLOGY ENGINEERING & INTEGRATION

ORGANIZATIONAL CONFLICT OF INTEREST CLAUSE (OCI)

- OCI CLAUSE TO BE INCLUDED IN RFP/CONTRACT
- ATCCS BFA's, CHS, AGCCS, AB2, PRIMES/SUBS
INELIGIBLE TO BID
- WINNING OFFEROR PROHIBITED FROM PARTICIPATING
IN ATCCS BFA's, CHS, AGCCS, AB2 PROGRAMS
- HARDWARE/SOFTWARE EXCLUSION

CONTRACT OPPORTUNITY

TITLE: C3 TECHNOLOGY ENGINEERING & INTEGRATION

OBJECTIVE: SINGLE INTEGRATOR CONCEPT
SUPPORTS TEAM FORT MONMOUTH
REQUIREMENTS FOR BOTH PEO's & RDEC

**PROPOSED
CONTRACT TYPE:** 5 YEAR TIME & MATERIALS

KEY MILESTONES: RFP RELEASE - 4TH QTR FY94
AWARD DATE - 2ND QTR FY 95

ESTIMATED VALUE: \$200 - 225 MILLION

**POC NAME/
TELEPHONE:** MR. ROBERT CARNEVALE / (908) 532-0161
MR. JOE JOHNSON / (908) 544-4797

NOTES

SESSION V

"COMMUNICATE"

MODERATOR

BG DAVID R. GUST
PROGRAM EXECUTIVE OFFICER
COMMUNICATIONS SYSTEMS

COMMUNICATIONS

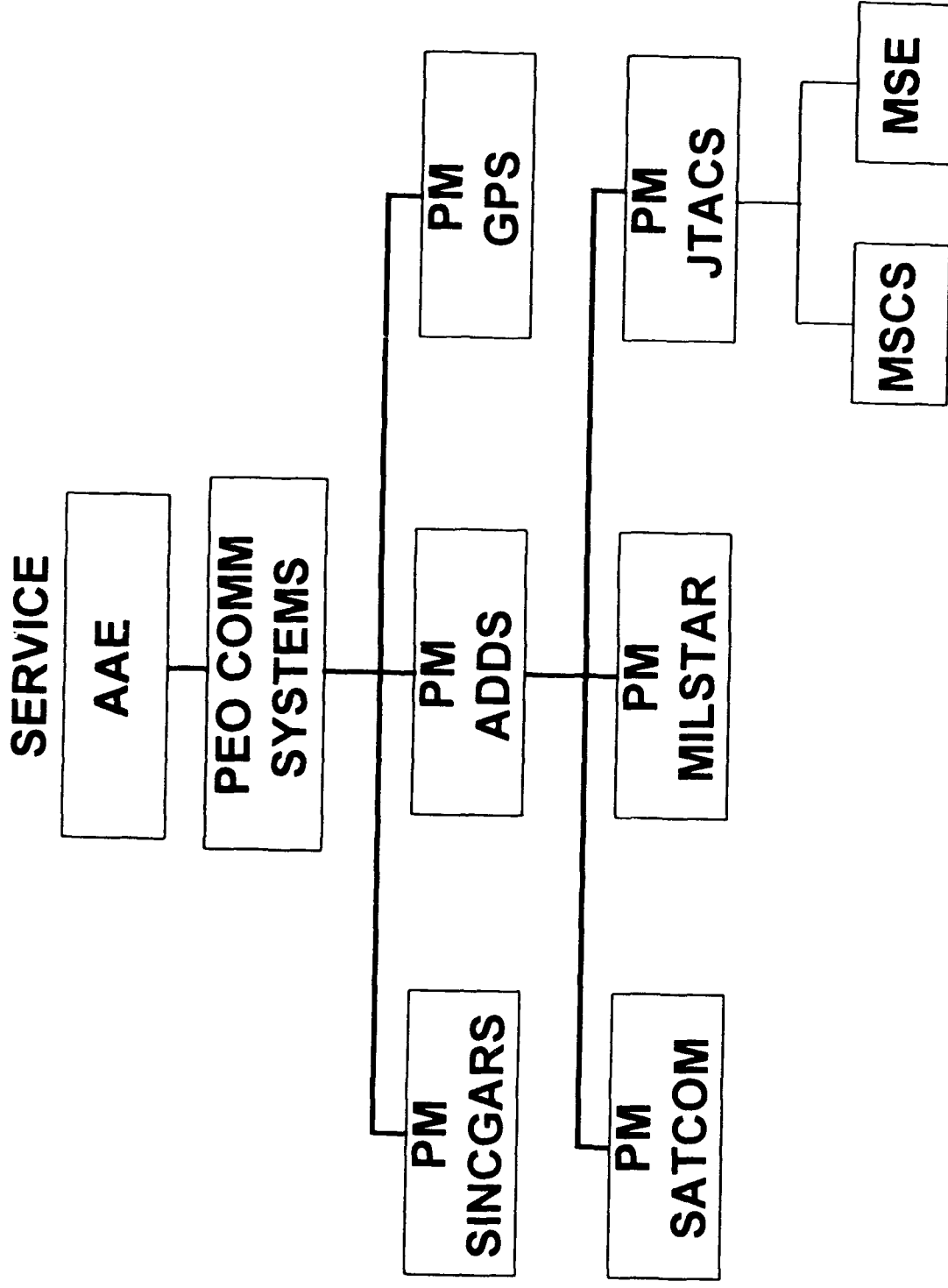


SYSTEMS

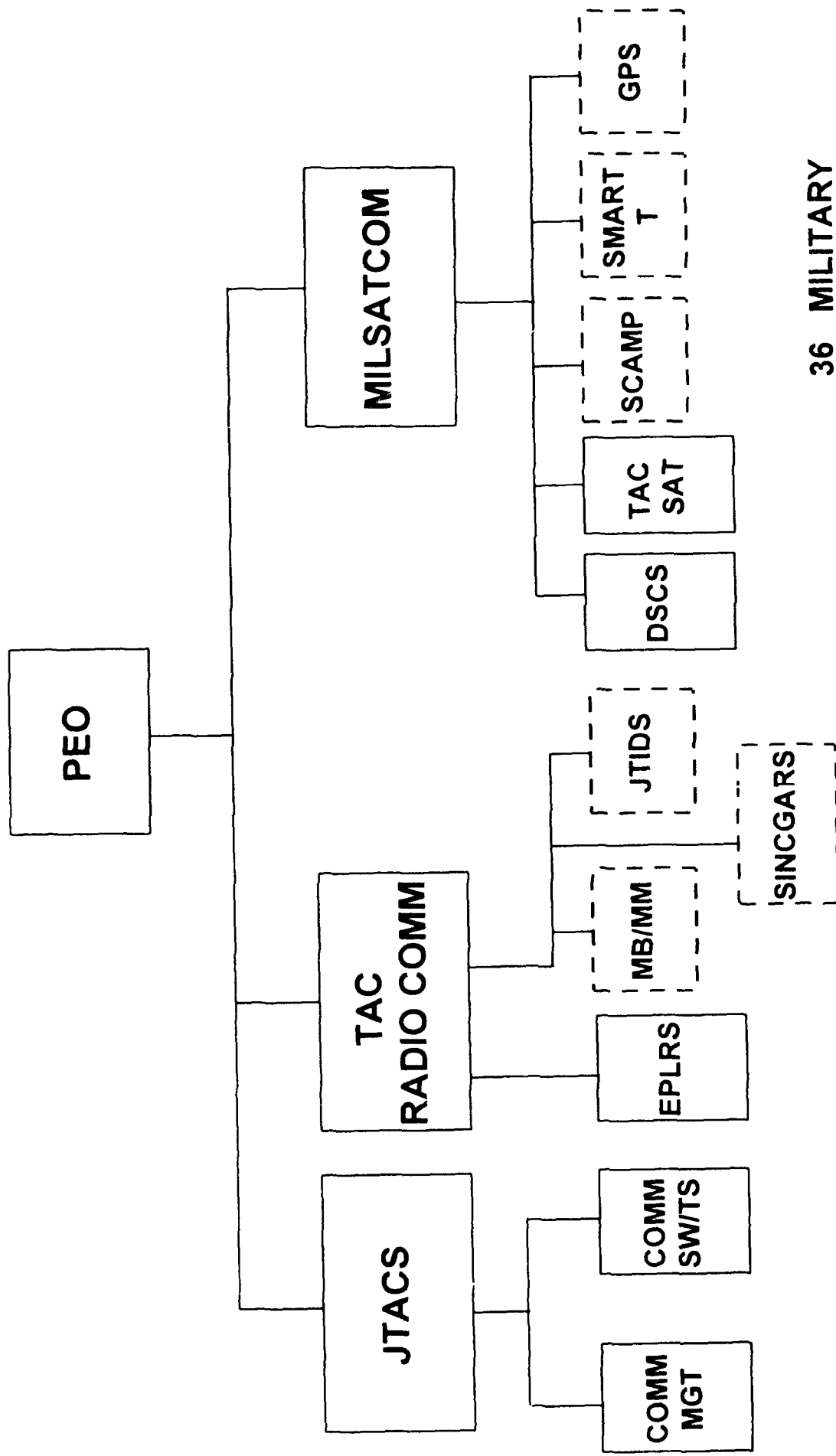
**BG DAVID R. GUST
PROGRAM EXECUTIVE OFFICER
COMMUNICATIONS SYSTEMS**

UNCLASSIFIED

PEO COMMUNICATIONS SYSTEMS STRUCTURE



PEO COMMUNICATIONS SYSTEMS FY97 - FY98 TIMEFRAME



3 PROJECT MANAGERS
11 PRODUCT MANAGERS

36 MILITARY
164 CIVILIAN
??? RESIDENT MATRIX

PEO COMMUNICATIONS SYSTEMS

FOCUS

- COUNTERING TOMORROW'S THREATS REQUIRES OBTAINING THE OBJECTIVES OF THE ARMY'S MODERNIZATION PLAN. TO THIS END, THE PEO COMM FOCUS IS ON IDENTIFYING, SUPPLYING, AND IMPLEMENTING THE SOPHISTICATED TECHNOLOGIES AND INFORMATION NEEDED TO SUPPORT THE ARMY WARFIGHTER.
- PEO COMM SYSTEMS HARDWARE ARE THE INTERCONNECTING PIPELINES FOR COMMUNICATIONS ON THE BATTLEFIELD
 - TACTICAL RADIO COMMUNICATIONS
 - AREA COMMON USER EQUIPMENT
 - SATELLITE BASED COMMUNICATIONS

PEO COMMUNICATIONS SYSTEMS SUPPORTS THE ARMY'S MODERNIZATION OBJECTIVES

ARMY MODERNIZATION OBJECTIVES

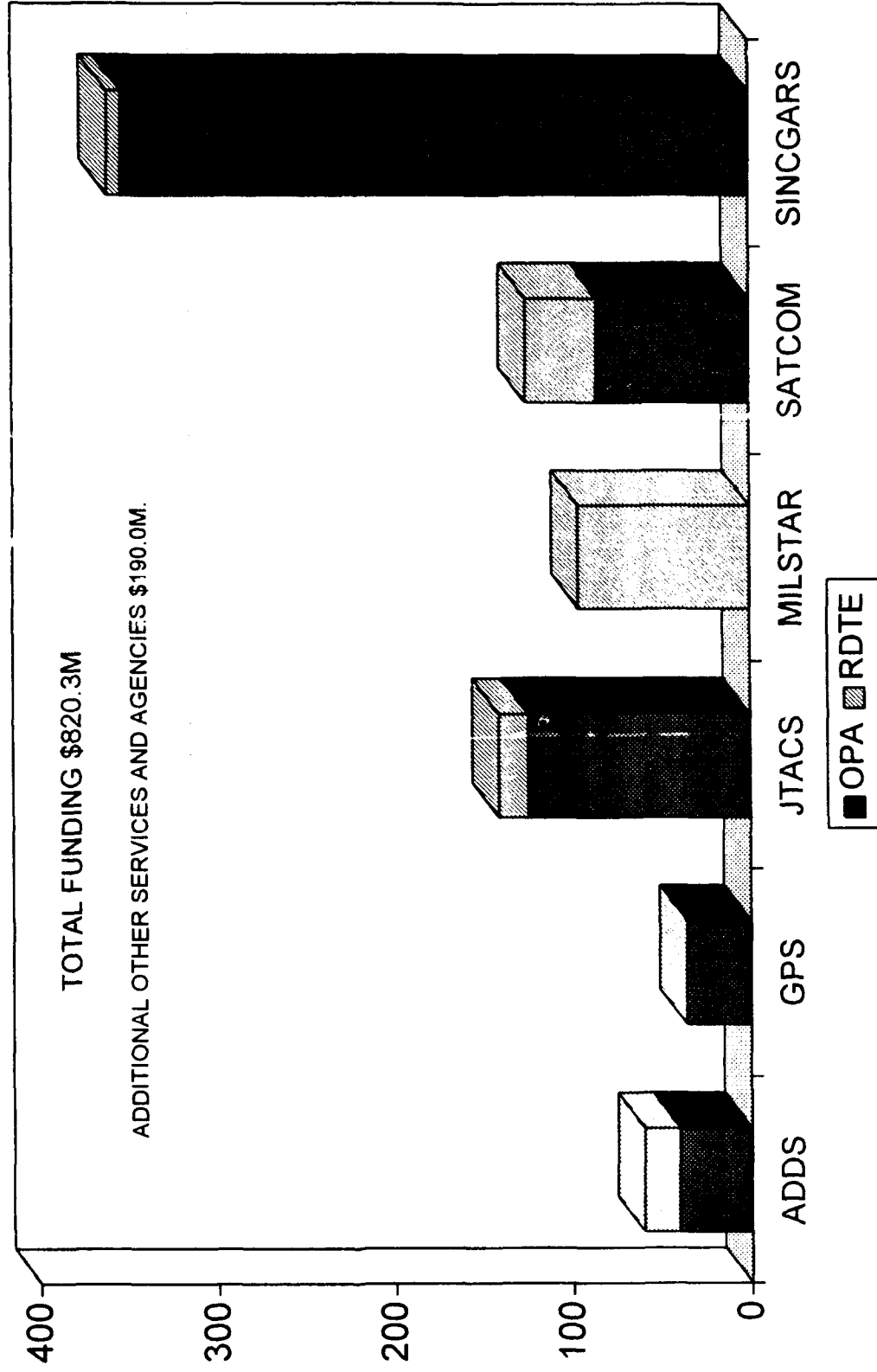
CSA's VISION

PEO COMM PROGRAMS

1. WIN THE INFORMATION WAR	OWN THE SPECTRUM DIGITIZE THE BATTLEFIELD	ISYSCON SINGGARS SATCOM GPS	MSE EPLRS JTIDS EAC COMM
2. PROTECT THE FORCE	OWN THE SPECTRUM KNOW THE ENEMY	ISYSCON GPS	EPLRS JTIDS
3. PROJECT AND SUSTAIN THE FORCE	DIGITIZE THE BATTLEFIELD	SINGGARS SATCOM GPS	EAC COMM MSE EPLRS JTIDS
4. CONDUCT PRECISION STRIKES THROUGHOUT THE BATTLEFIELD	OWN THE SPECTRUM DIGITIZE THE BATTLEFIELD	SINGGARS SATCOM GPS	MSE EAC COMM EPLRS JTIDS
5. DOMINATE MANEUVER BATTLE	DIGITIZE THE BATTLEFIELD KNOW THE ENEMY	SINGGARS SATCOM GPS	MSE EAC COMM EPLRS JTIDS

PEO COMMUNICATIONS SYSTEMS

FY94 PM FUNDING (\$M)



PERFECT INTEROPERABILITY...

WHEN OTHER SERVICES BUY

OUR EXACT SAME HARDWARE

ACRONYMS

AAE	ARMY ACQUISITION EXECUTIVE
ACUS	AREA COMMON USER SYSTEM
ATM	ASYNCHRONOUS TRANSFER MODE
COMM MGT	COMMUNICATIONS MANAGEMENT
COMSEC	COMMUNICATIONS SECURITY
DDS	DEFENSE DATA SERVICE
DISA	DEFENSE INFORMATION SYSTEMS AGENCY
DSCS	DEFENSE STRATEGIC COMMUNICATION SYSTEM
EAC COMM	ECHELONS ABOVE CORPS COMMUNICATIONS
EHF	EXTREME HIGH FREQUENCY
EMD	ENGINEERING & MANUFACTURING DEVELOPMENT
EPLRS	ENHANCED POSITION LOCATION REPORTING SYSTEM
FDR	FUTURE DATA RADIO
FSP	FULL SCALE PRODUCTION
HF	HIGH FREQUENCY
IOC	INITIAL OCCUPANCY CAPABILITY
ISYSCON	INTEGRATED SYSTEM CONTROL
JIEO	JOINT INTEROPERABILITY ENGINEERING ORGANIZATION
JTIDS	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM
MILSATCOM	MILITARY SATELLITE COMMUNICATIONS
MB/MM	MULTIBAND/MULTIMODE
MSCS	MULTI-SERVICE COMMUNICATIONS SYSTEMS
MSE	MOBILE SUBSCRIBER EQUIPMENT
MTBOMF	MEAN-TIME BETWEEN OPERATIONAL MISSION FAILURE
NBC	NUCLEAR, BIOLOGICAL, CHEMICAL

NDI	NON-DEVELOPMENTAL ITEM
NSA	NATIONAL SECURITY AGENCY
OPA	OTHER PROCUREMENT ARMY
ORD	OPERATIONAL READINESS DIRECTIVE
PEO COMM	PROGRAM EXECUTIVE OFFICER, COMMUNICATIONS SYSTEMS
PM ADDS	PROJECT MANAGER, ARMY DATA DISTRIBUTION SYSTEM
PM GPS	PROJECT MANAGER, GLOBAL POSITIONING SYSTEM
PM JTACS	PROJECT MANAGER, JOINT TACTICAL AREA COMMUNICATIONS SYSTEMS
PM MILSTAR	PROJECT MANAGER, MILSTAR (ARMY)
PM SATCOM	PROJECT MANAGER, SATELLITE COMMUNICATIONS
PM SINCGARS	PROJECT MANAGER, SINGLE CHANNEL GROUND & AIRBORNE RADIO SYSTEMS
R&D	RESEARCH & DEVELOPMENT
RDTE	RESEARCH, DEVELOPMENT & TEST EQUIPMENT
RF	RADIO FREQUENCY
SCAMP	SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL
SHF	SUPER HIGH FREQUENCY
SSCN	SECURE SURVIVABLE COMMUNICATION NETWORK
SMART-T	SECURE MOBILE ANTI-JAM RELIABLE TACTICAL-TERMINAL
SSCN	SECURE SURVIVABLE COMMUNICATION NETWORK
STAR-T	SUPER HIGH FREQUENCY TRI-BAND ADVANCED RANGE EXTENSION TERMINAL
TAC RADIO COMM	TACTICAL RADIO COMMUNICATIONS
TACSAT	TACTICAL SATELLITE
TBD	TO BE DETERMINED
TRANSEC	TRANSMISSION SECURITY

BEST AVAILABLE COPY

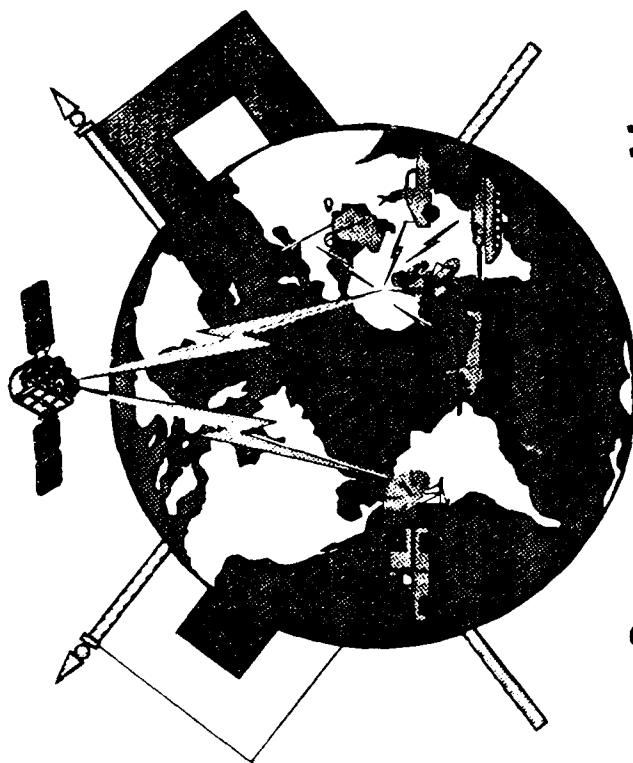
UHF

ULTRA HIGH FREQUENCY

VHF

VERY HIGH FREQUENCY

NOTES



SPACE & TERRESTRIAL COMMUNICATIONS DIRECTORATE

DIGITAL BATTLEFIELD COMMUNICATIONS

JOSEPH J. PUCILOWSKI, Jr.

**DIRECTOR, SPACE AND TERRESTRIAL
COMMUNICATIONS
RESEARCH, DEVELOPMENT AND
ENGINEERING CENTER**

UNCLASSIFIED

POINT PAPER

SUBJECT: Digital Battlefield Communications

EXECUTIVE SUMMARY: The Digital Battlefield Communications Program is a five year effort to develop and demonstrate prototype communication equipment and software to distribute multimedia information seamlessly to Brigade and below units on the move. This effort is a proposed new Army ATD.

The objectives are to demonstrate a secure, robust, seamless, digital multimedia information transport capability for the Army tactical user that is compliant with, and exploits, engineering commercial standards and the global grid architecture. (from our Quad chart).

The program is designed to satisfy the "information pull" required by the warfighter of the next decade by eliminating the current constraints of limited bandwidth, mobility, and interoperability. The end product will be warfighter access, whenever and wherever needed, to large volumes of imagery, intelligence and logistics data necessary to support split based operations worldwide.

Two major opportunities expected over the next few years include the development of a prototype Radio Access Point (RAP), required to extend wideband information access to forward mobile fighting elements, and an effort to exploit the anticipated commercial offering of satellite Personal Communications Services (PCS) by supplementing the commercial satellite constellation with surrogate satellites in tactical manned or unmanned aircraft. RFP for the RAP is expected in FY 97, for a demonstration in FY 99. RFP for the Surrogate Satellite PCS effort is expected in FY 96, for a demonstration in FY 98.

BRIEFER: Joseph J. Pucilowski, Jr., Director, Space & Terrestrial Communications Directorate, AMSEL-RD-ST-D, (908) 544-4449.

ACTION OFFICER
Paul Sass
Project Manager for Digital
Battlefield Communications
(908) 544-2419

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DIGITAL BATTLEFIELD COMMUNICATIONS DESCRIPTION

THE DIGITAL BATTLEFIELD COMMUNICATIONS PROGRAM IS A FIVE YEAR EFFORT TO DEVELOP AND DEMONSTRATE PROTOTYPE COMMUNICATION EQUIPMENT AND SOFTWARE TO DISTRIBUTE MULTIMEDIA INFORMATION SEAMLESSLY TO BRIGADE AND BELOW UNITS ON THE MOVE. THE PROJECT IS BEING NOMINATED TO BE AN ADVANCED TECHNOLOGY DEMONSTRATION.

- [illegible]

DIGITAL BATTLEFIELD COMMUNICATIONS STATUS

A EXISTING OPERATIONAL CAPABILITIES

- **OBTRUSIVE ON-THE-MOVE UHF SATELLITE ANTENNA,
NO CAPABILITY FOR SHF**
- **MSE WITH TPN (16Kbps), EPLRS (1.2Kbps), SINCGARS
(≤ 4.8 Kbps)**
- **STOVE PIPE RADIO NETWORKS**
- **MODELLING CAPABILITY INADEQUATE FOR COMM
SYSTEMS ENGINEERING**

DIGITAL BATTLEFIELD COMMUNICATIONS STATUS (CONT)

B EXISTING CONCEPTS/TECHNOLOGIES FOR R&D

- **CONFORMAL ANTENNA ARRAY - MICROSTRIP SLOTS,
PHOTONICS**
- **HIGH CAPACITY DATA RADIO**
- **UAV RADIO RELAY**
- **NETWORK MODELLING AND ENGINEERING TOOLS**
- **MULTIFUNCTIONAL RADIO**
- **ATM, MULTIMEDIA SWITCHING**
- **PERSONAL COMMUNICATIONS SERVICES (PCS)**

DIGITAL BATTLEFIELD COMMUNICATIONS OBJECTIVES

- **SEAMLESS ROUTING**
- **HIGH VOLUME COMMUNICATIONS ON
THE MOVE**
- **COMPATIBILITY OF LEGACY SYSTEMS WITH
EMERGING COMMERCIAL TECHNOLOGY**
- **HIGH CAPACITY MULTIMEDIA SERVICES**
- **MULTILEVEL SECURITY**

DIGITAL BATTLEFIELD COMMUNICATIONS REQUIREMENTS

- 45 MBS TO 155 MBS TRUNK RADIO (ON-THE-MOVE)
- UHF CONFORMAL, LOW PROFILE SATELLITE ANTENNA
- SHF LOW PROFILE SATELLITE ANTENNA
- RANGE EXTENSION
 - WIDEBAND TRUNK RADIO
 - SINCGARS
 - EPLRS
 - WIDEBAND PACKET RADIO

DIGITAL BATTLEFIELD COMMUNICATIONS REQUIREMENTS (CONT'D)

- **MULTIFUNCTIONAL RADIO**
 - **SINGGARS**
 - **IHFR**
 - **MSRT**
 - **WIDEBAND PACKET RADIO**
 - **TACSAT**
- **NETWORK MANAGEMENT TOOLS**
 - **HIGH LEVEL PLANNING**
 - **DETAIL NETWORK PLANNING/ENGINEERING**
 - **MONITORING**
 - **RECONFIGURATION**

DIGITAL BATTLEFIELD COMMUNICATIONS PAYOFFS

- SEAMLESS DIGITAL COMMUNICATIONS
- COMMAND AND CONTROL ON THE MOVE
- COMMUNICATIONS RANGE EXTENSION
- IMPROVED SPEED OF SERVICE
- COMMUNICATIONS RELIABILITY/SURVIVABILITY
- MULTIMEDIA OPERATIONS
- SITUATION AWARENESS

DIGITAL BATTLEFIELD COMMUNICATIONS SHORT-TERM MILESTONES

FY 95

- **SYSTEM ARCHITECTURE AND REQUIREMENTS
DEFINITION**
- **SIMULATIONS OF TACTICAL DATA NETWORKS TO
DETERMINE "HOT SPOTS"**
- **MODEL TRUNK RADIO**
- **DEMONSTRATE WIDEBAND COMMUNICATIONS
NETWORK**

DIGITAL BATTLEFIELD COMMUNICATIONS

LONG-TERM MILESTONES

FY 96-99

- **COMPLETE SYSTEM COMPONENTS AS DEFINED BY ARCHITECTURE ANALYSIS**
 - **CONFORMAL/LOW PROFILE SATCOM ANTENNAS**
 - **WIDEBAND DATA RADIO**
 - **RADIO ACCESS POINT**
 - **NETWORK MANAGEMENT TOOLS**
 - **MULTIBAND RADIO**
 - **RADIO RELAY**
 - **MODELLING AND SIMULATION**
 - **MILITARY EXPLOITATION OF COMMERCIAL PCS**

DIGITAL BATTLEFIELD COMMUNICATIONS

FUNDING PROFILE (\$M)

	RDTE
FY-95	7 - 10
FY-96	9 - 12
FY-97	11 - 13
FY-98	8 - 10
FY-99	5 - 7
TOTAL	40 - 52

CONTRACT OPPORTUNITY

TITLE: RADIO ACCESS POINT (RAP)

**OBJECTIVE: BUILD PROTOTYPE OF RAP AND
DEMONSTRATE ITS CAPABILITY**

**PROPOSED CONTRACT TYPE: COMPETITIVE;
COST PLUS AWARD FEE**

**KEY MILESTONES: RFP IN MID FY97
CONTRACT AWARD IN FY98
DEMONSTRATION IN FY99**

EST. VALUE: \$ 3-5M

POC: MR. PAUL SASS, (908)544-2419

CONTRACT OPPORTUNITY

TITLE: SURROGATE SATELLITE PCS

**OBJECTIVE: TO DEVELOP A PROTOTYPE PCS SYSTEM
UTILIZING A SURROGATE SATELLITE
PLATFORM**

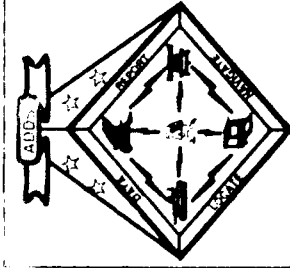
**PROPOSED CONTRACT TYPE: COMPETITIVE;
COST PLUS AWARD FEE**

**KEY MILESTONES: RFP IN FY96
CONTRACT AWARD IN FY97
DEMONSTRATION IN FY98**

EST. VALUE: \$2-4M

POC: MR. PAUL SASS, (908)544-2419

NOTES



THE FUTURE DATA RADIO (FDR)

HAROLD H. BAHR
DEPUTY PROJECT MANAGER
ARMY DATA DISTRIBUTION SYSTEM (ADDS)

UNCLASSIFIED

14 April 1994

POINT PAPERSUBJECT: The Future Data Radio (FDR)

OBJECTIVE: The FDR is a mobile radio transceiver which shall satisfy the greatly expanded data needs of a battalion and brigade task force to perform airland operations. It provides an enhanced capability for rapid reconfiguration to adapt to the deployment requirements of the user.

STATUS: The FDR is currently in the Pre-Concept Exploration and Definition Phase of the Defense Materiel Acquisition Process. A Mission Needs Statement (MNS) is currently going through the final stages of staffing by the user proponent, the Army Signal Center, Fort Gordon, Georgia. The basis of the MNS is a new technical approach which has the potential to be a more cost effective solution to the existing communication "legacy systems" that are currently - or about to be - deployed.

FACTS:

- Contract Opportunity: Manufacture 3,000 to 5,000 radios to equip the Active Army.
- Type of Contract: Competitive - Fixed Price.
- Milestones: Contingent upon evolving results associated with "digitizing the battlefield".
- Work will involve tasks related to:
 - Antennas.
 - Radio Frequency (RF) Front Ends.
 - Open Architecture.
 - Simultaneous Operations.
 - Computer Processing.
 - Adaptive Networking.
 - Multi-Level Security.
 - Power Conservation.
 - Micro Processor Programmability.
 - Packaging.

BRIEFER: Mr. Harold H. Bahr, Deputy Project Manager, Army Data Distribution System (ADDS), SFAE-CM-ADD, (908) 532-4251.

ACTION OFFICER:
Harold H. Bahr
OPM ADDS
(908) 532-4251

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THE FUTURE DATA RADIO (FDR) DESCRIPTION

THE FDR IS A MOBILE RADIO TRANSCEIVER WHICH SHALL SATISFY THE GREATLY EXPANDED DATA NEEDS OF A BATTALION AND BRIGADE TASK FORCE TO PERFORM AIR-LAND OPERATIONS. IT PROVIDES AN ENHANCED CAPABILITY FOR RAPID RECONFIGURATION TO ADAPT TO THE DEPLOYMENT REQUIREMENTS OF THE USER.

THE FUTURE DATA RADIO (FDR)

THE FDR SHALL MAXIMIZE:

- JOINT AND COMBINED INTEROPERABILITY.
- ABILITY TO COMMUNICATE TO SYNCHRONIZE COMBAT.
- CAPABILITY TO NAVIGATE AND DETERMINE POSITION LOCATION.
- ABILITY TO TRANSPORT DIGITAL DATA IN AN ELECTRONIC WARFARE ENVIRONMENT.
- ABILITY TO PERFORM OVER-THE-AIR REKEYING.

THE FUTURE DATA RADIO (FDR) ATTRIBUTES

- MULTI-FUNCTIONAL
 - DATA
 - VOICE
- MULTI-MODE
 - HF/VHF/UHF/SHF/EHF
 - MULTIPLE BANDWIDTHS/WAVEFORMS
 - SECURE/NON-SECURE
 - OVER-THE-AIR REKEYING
- INTEROPERABLE WITH
 - SINGGARS
 - MSE
 - EPLRS
 - JTIDS
 - GPS
 - MILSTAR
 - OTHER SATELLITE BASED SYSTEMS

THE FUTURE DATA RADIO (FDR) ATTRIBUTES (CON'T)

- SIMULTANEOUS RECEPTIONS
- SEAMLESS INFORMATION EXCHANGE
 - HORIZONTAL
 - VERTICAL
- JAM RESISTANT
- EMBEDDED COMSEC
- HIGH-RELIABILITY
- LOW POWER CONSUMPTION
- LOW-COST
- LIGHT-WEIGHT

THE FUTURE DATA RADIO (FDR) REQUIREMENTS

IDEAL

- SIMULTANEOUS WAVEFORM OPERATION
- SOFTWARE RECONFIGURABLE WAVEFORMS
- BACKWARD COMPATIBLE
- MULTI-LEVEL SECURITY
- SECURE/NON-SECURE VOICE & DATA
- OVER-THE-AIR-REKEYING
- RANGE UP TO 12,000 KILOMETERS
- 12 LBS WEIGHT W/O BATTERY
- 24 HOUR CONTINUOUS OPERATION

THE FUTURE DATA RADIO (FDR) REQUIREMENTS (CONTINUED)

WAVEFORMS (PRIORITY ORDER)

- SINGGARS
- MSE
- EPLRS
- JTIDS
- GPS
- MILSTAR
- OTHER SATELLITE BASED SYSTEMS

THE FUTURE DATA RADIO (FDR)

NEEDED TECHNOLOGIES FOR R&D

- ANTENNAS
- RADIO FREQUENCY (RF) FRONT ENDS
- OPEN ARCHITECTURE
- SIMULTANEOUS OPERATIONS
- SIGNAL PROCESSING
- ADAPTIVE NETWORKING
- MULTI-LEVEL SECURITY
- POWER CONSERVATION
- PROGRAMMABILITY
- PACKAGING

THE FUTURE DATA RADIO (FDR) CONTRACT OPPORTUNITY

OBJECTIVE: MANUFACTURE 3000 TO 5000
RADIOS TO EQUIP ACTIVE ARMY

CONTRACT TYPE: COMPETITIVE

KEY MILESTONES: CONTINGENT UPON
EVOLVING RESULTS
ASSOCIATED WITH
DIGITIZING THE BATTLEFIELD

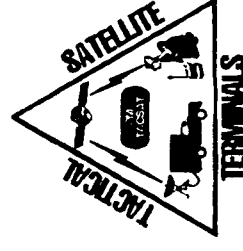
ESTIMATED COST: TBD

POC: MR. HAROLD H. BAHR, (908) 532-4251

NOTES

SUPER HIGH FREQUENCY (SHF) TRI-BAND ADVANCED RANGE EXTENSION TERMINAL (STAR-T)

**LTC MICHAEL R. MAZZUCCHI
PRODUCT MANAGER, TACTICAL SATELLITE
TERMINALS
PROJECT MANAGER, SATELLITE
COMMUNICATIONS**



UNCLASSIFIED

POINT PAPER

SUBJECT: Super High Frequency (SHF) Tri-band Advanced Range Extension Terminal (STAR-T)

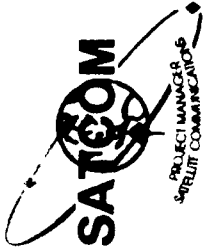
OBJECTIVE: The STAR-T program will provide tri-band, multichannel tactical satellite terminals to extend the range of common user communication systems. Mounted on a High Mobility Multi-purpose Wheeled Vehicle, it will be capable of operating over both commercial and military SHF satellites. With antenna and power unit mounted on the vehicle, the terminal is fully self-contained and easily transported by C-130 and larger aircraft. Additionally, selected terminals will have an integrated switching capability interfacing with commercial and military switching systems. The terminal has strong joint service applicability and will replace the majority of existing tactical SHF multichannel terminals.

FACTS:

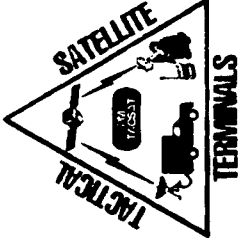
- **Contract Opportunity:** Produce and field between 150 and 350 non-developmental item (NDI) multichannel tactical satellite terminals
- **Type of Contract:** Competitive Firm Fixed Price
- **Schedule:** Acquisition schedule in development, First Unit Equipped scheduled for 1999.
- **Program will result in:**
 1. Increased satellite communication capacity
 2. Greater flexibility (Multiband, Switching, Commonality)
 3. Reduced manpower and required strategic lift
 4. Little research and development
 5. Much reduced acquisition time and cost

BRIEFER: LTC Michael R. Mazzucchi, Product Manager, Tactical Satellite Terminals, SFAE-CM-SC-TT, (908) 532-6105

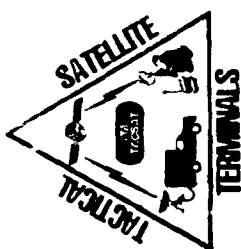
ACTION OFFICER:
Mr. Ed Velez
PM TACSAT
(908) 532-0994



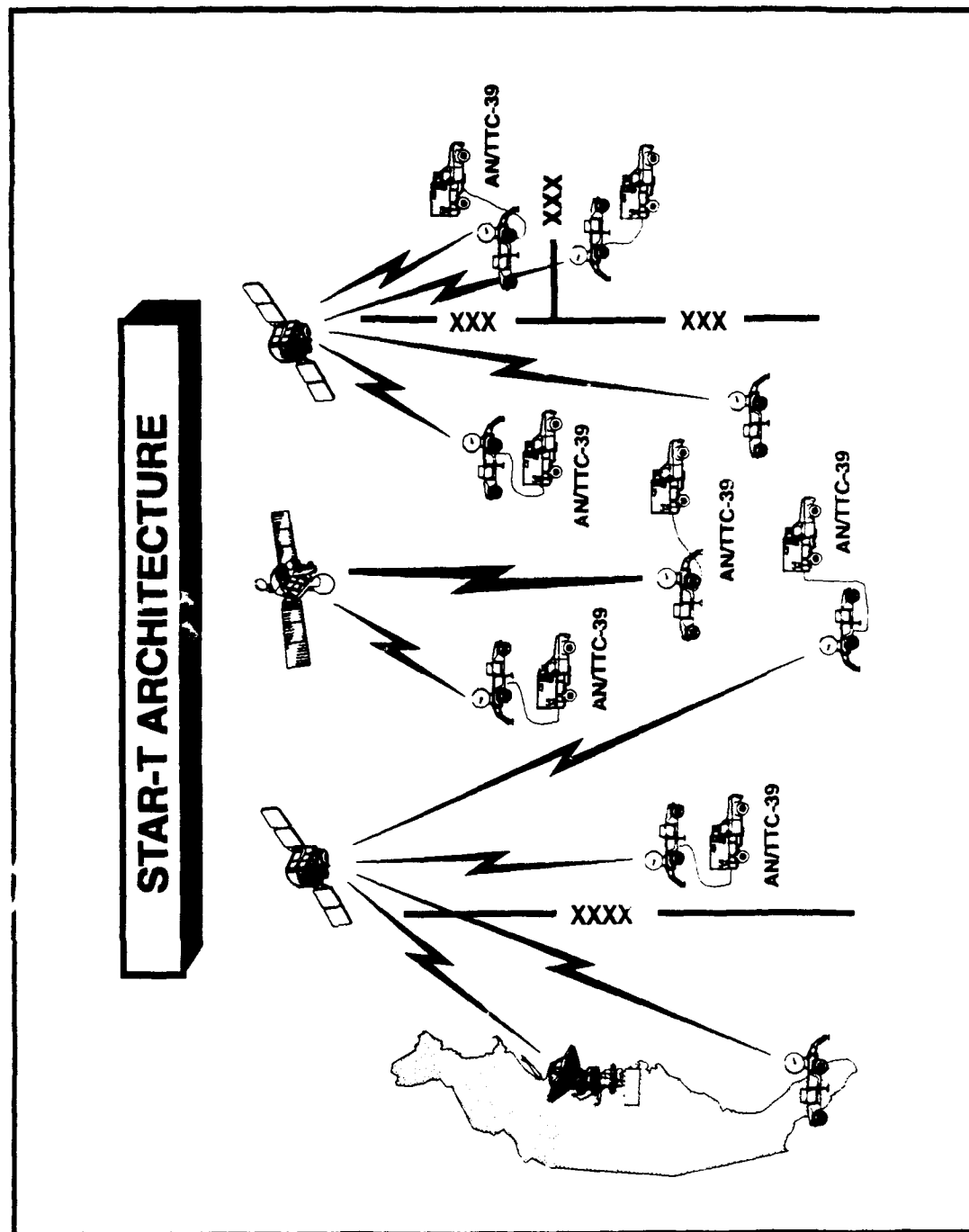
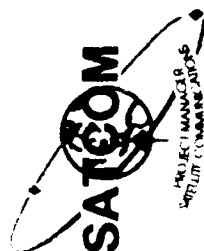
STAR-T

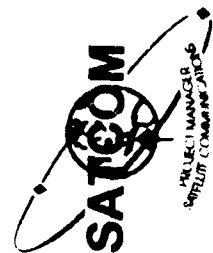


THE STAR-T IS A SELF CONTAINED, MULTICHANNEL TACTICAL SATELLITE TERMINAL MOUNTED ON A HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE CAPABLE OF OPERATING OVER COMMERCIAL AND MILITARY SATELLITES. SELECTED TERMINALS WILL ALSO HAVE AN INTEGRATED SWITCHING CAPABILITY INTERFACING WITH COMMERCIAL AND JOINT MILITARY SWITCHING SYSTEMS. THE STAR-T HAS STRONG JOINT SERVICE APPLICABILITY AND WILL REPLACE CURRENT TACTICAL SHF MULTICHANNEL TERMINALS.

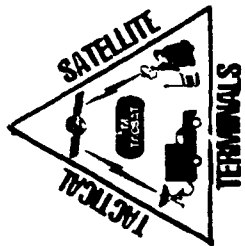


STAR-T ARCHITECTURE

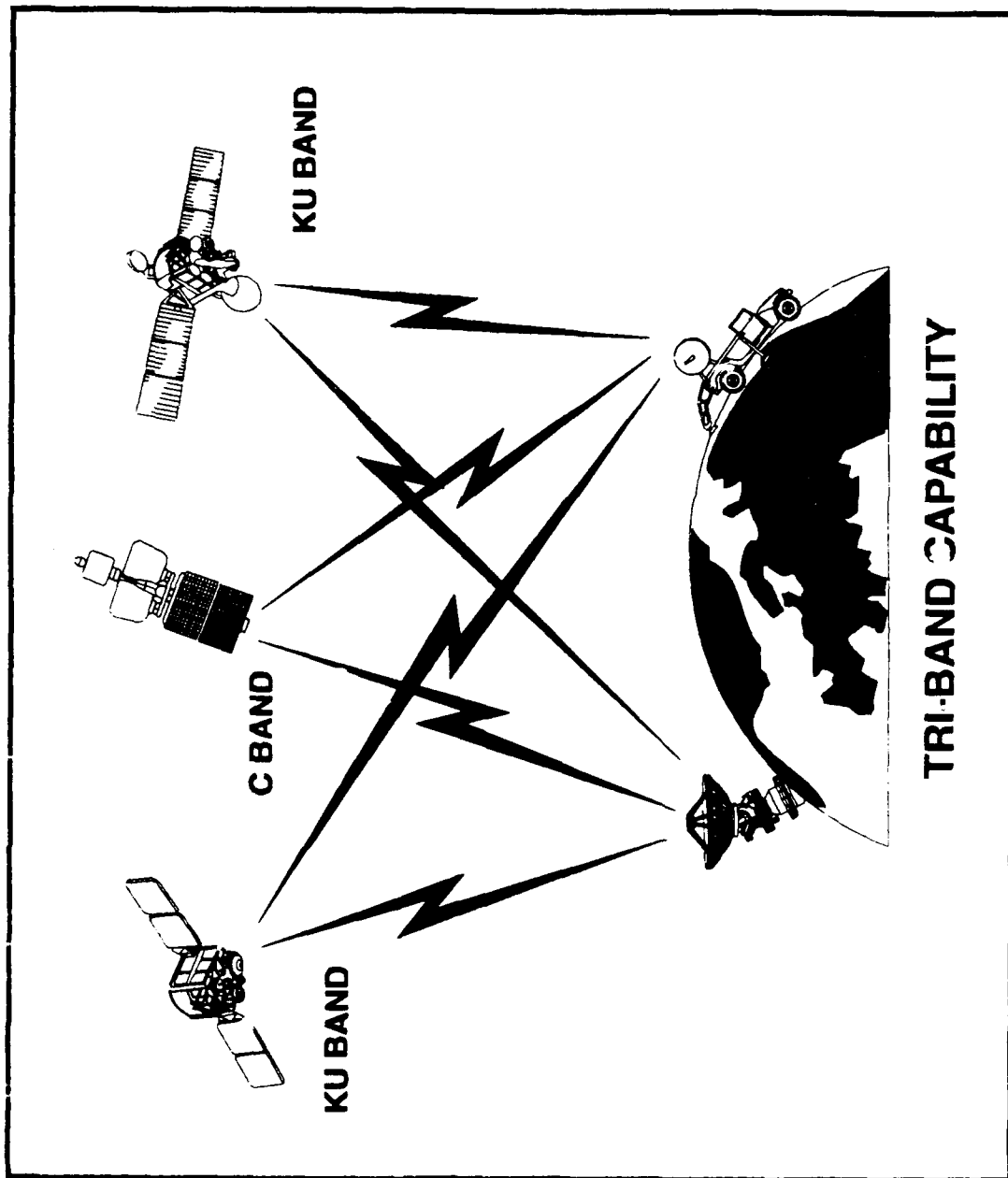




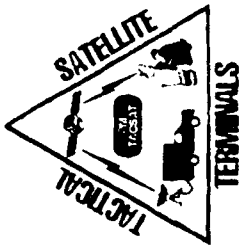
STAR-T



TRI-BAND CAPABILITY



TRI-BAND CAPABILITY



STAR-T

HIGH MOBILITY

& SELF CONTAINED

CURRENT SYSTEMS

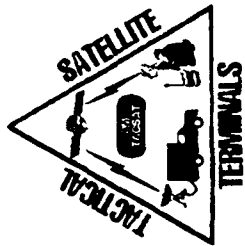
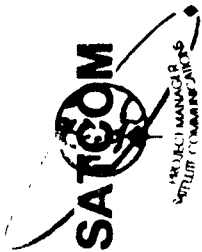
THE EVOLUTION OF TACTICAL
MULTICHANNEL SHF SYSTEMS

ANTSC-93B

- HUB-SPOKE CONFIGURATION
- LIMITED THROUGHPUT
- LARGER ANTENNAS
- 1960'S TECHNOLOGY
- LIMITED MOBILITY
- LIMITED DEPLOYABILITY

ANTSC-85B

TRI-BAND TERMINAL

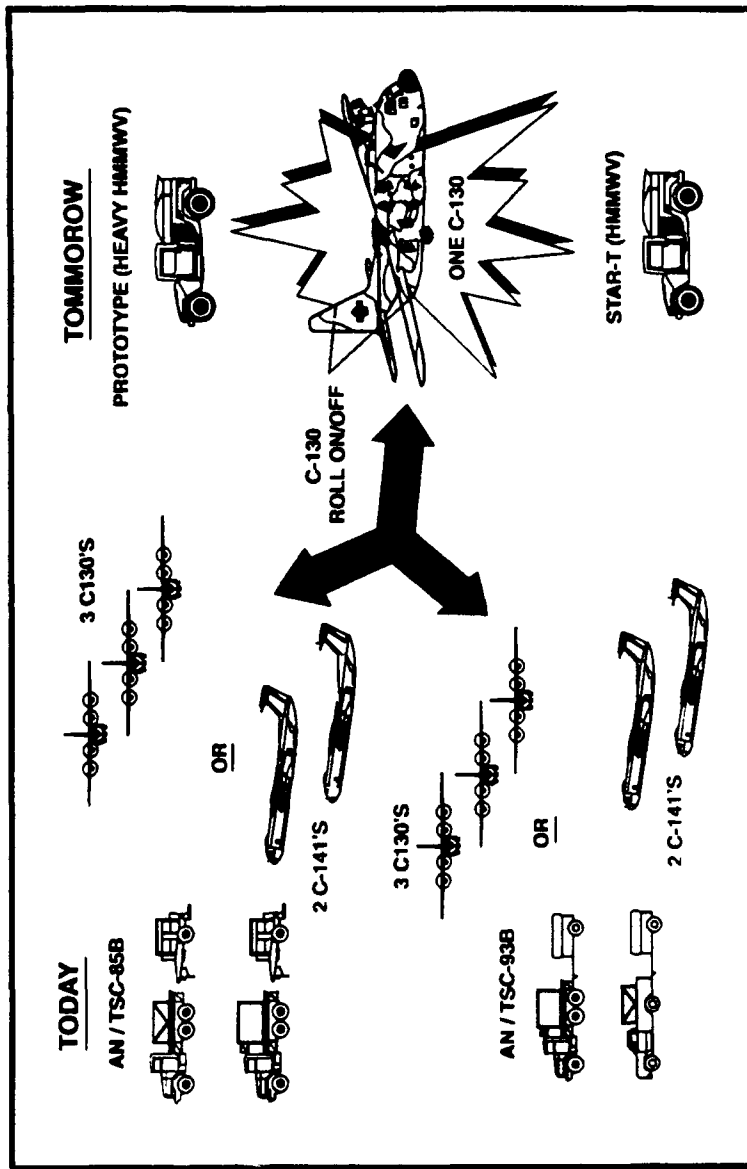


STAR-T

HIGH MOBILITY

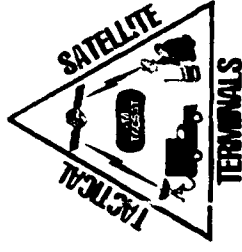
& SELF CONTAINED

DEPLOYABILITY COMPARISON

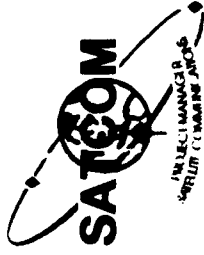




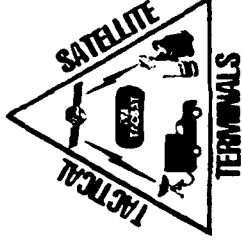
STAR-T STATUS



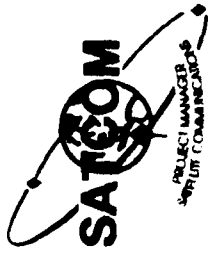
- MISSION NEEDS STATEMENT APPROVED BY
DEPARTMENT OF ARMY
- OPERATIONAL REQUIREMENTS DOCUMENT
APPROVED BY TRAINING AND DOCTRINE
COMMAND



STAR-T OBJECTIVES

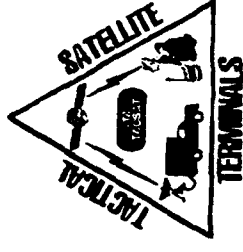


- **ACQUIRE UP TO 150 TERMINALS TO MEET ARMY REQUIREMENTS.**
- **PREPARE TO ACQUIRE UP TO AN ADDITIONAL 200 TERMINALS TO MEET OTHER SERVICE REQUIREMENTS.**
- **PURSUE NON-DEVELOPMENTAL ITEM (NDI) ACQUISITION STRATEGY.**

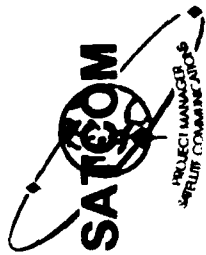


STAR-T

TOP LEVEL REQUIREMENTS



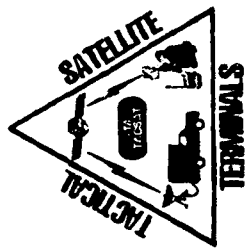
- OPERATE IN C,X, AND KU FREQUENCY BANDS.
- MOUNTED & SELF-CONTAINED ON SINGLE HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (POWER & ANTENNA).
- MOUNTED ON REMOVEABLE PALLET.



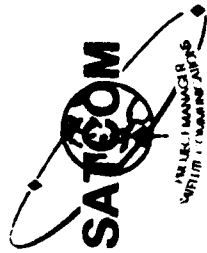
STAR-T

TOP LEVEL REQUIREMENTS

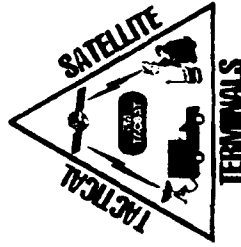
(CONTINUED)



- EMBEDDED AND INTEGRATED ARMY COMMON USER SYSTEM & COMMERCIALY COMPATIBLE SWITCH.
- TOTAL AGGREGATE DATA RATE OVER 8 MEGA BITS/SECOND.
- QUICK SET-UP/TEAR-DOWN AND ABILITY TO CHANGE BETWEEN FREQUENCY BANDS.

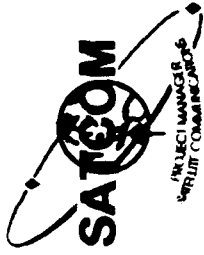


STAR-T MILESTONES

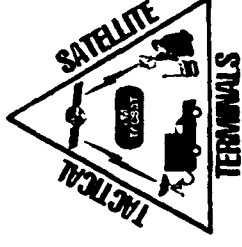


FY-95 & BEYOND

- REQUIREMENTS VALIDATION & PROGRAM INITIATION EXPECTED IN TERM.
- FIRST UNIT EQUIPPED IS SCHEDULED FOR FISCAL YEAR 1999



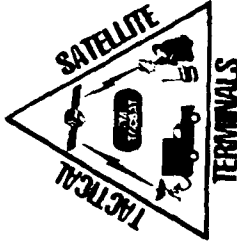
STAR-T PAYOFFS



- INCREASED SATELLITE COMMUNICATION CAPACITY AVAILABLE TO SUPPORT WARFIGHTER COMMAND & CONTROL.
- GREATER FLEXIBILITY (MULTIBAND, SWITCHING, COMMONALITY).
- REDUCED MANPOWER NECESSARY.
- REDUCED STRATEGIC AIRLIFT NECESSARY.
- LITTLE RESEARCH AND DEVELOPMENT REQUIRED
- MUCH REDUCED ACQUISITION TIME AND COST.



CONTRACT OPPORTUNITY



**TITLE: SUPER HIGH FREQUENCY TRI-BAND
ADVANCED RANGE EXTENSION TERMINAL**

**OBJECTIVE: ACQUIRE BETWEEN 150 AND 350
NON-DEVELOPMENTAL ITEM
MULTICHANNEL TACTICAL
SATELLITE TERMINALS**

PROPOSED

CONTRACT TYPE: COMPETITIVE, FIRM FIXED PRICE

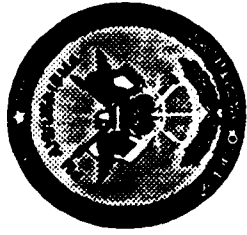
**KEY MILESTONES: ACQUISITION SCHEDULE NOT
DEVELOPED, FIRST UNIT EQUIPPED
SCHEDULED FOR FY 1999**

ESTIMATED VALUE: TBD

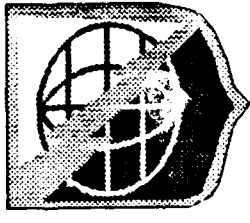
**POC NAME/TELEPHONE: LTC MICHAEL MAZZUCCHI
(908) 532-0994**

NOTES

STRATEGIC / BASE COMMUNICATIONS



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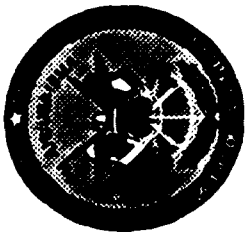
STRATEGIC/BASE COMMUNICATIONS

THOMAS J. MICHELLI

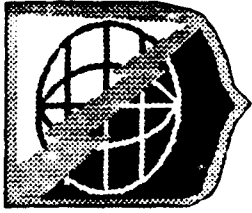
DEPUTY, INFORMATION SYSTEMS MANAGEMENT ACTIVITY

12 MAY 1994

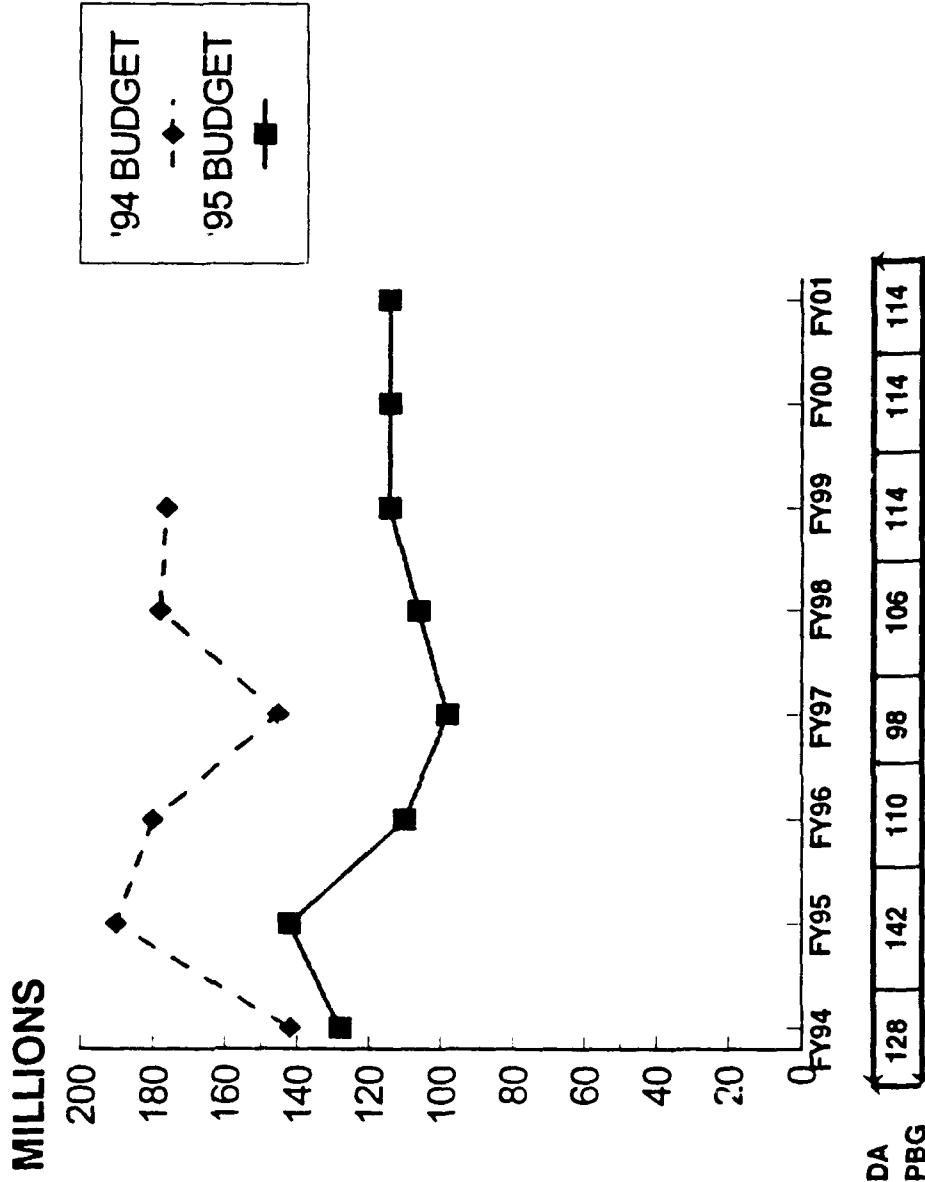
PROVIDING SMART SOLUTIONS FOR OUR CUSTOMERS



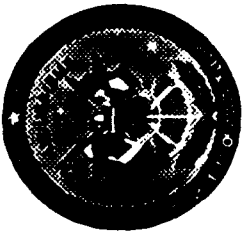
USAISMA



OPA FUNDING TRENDS



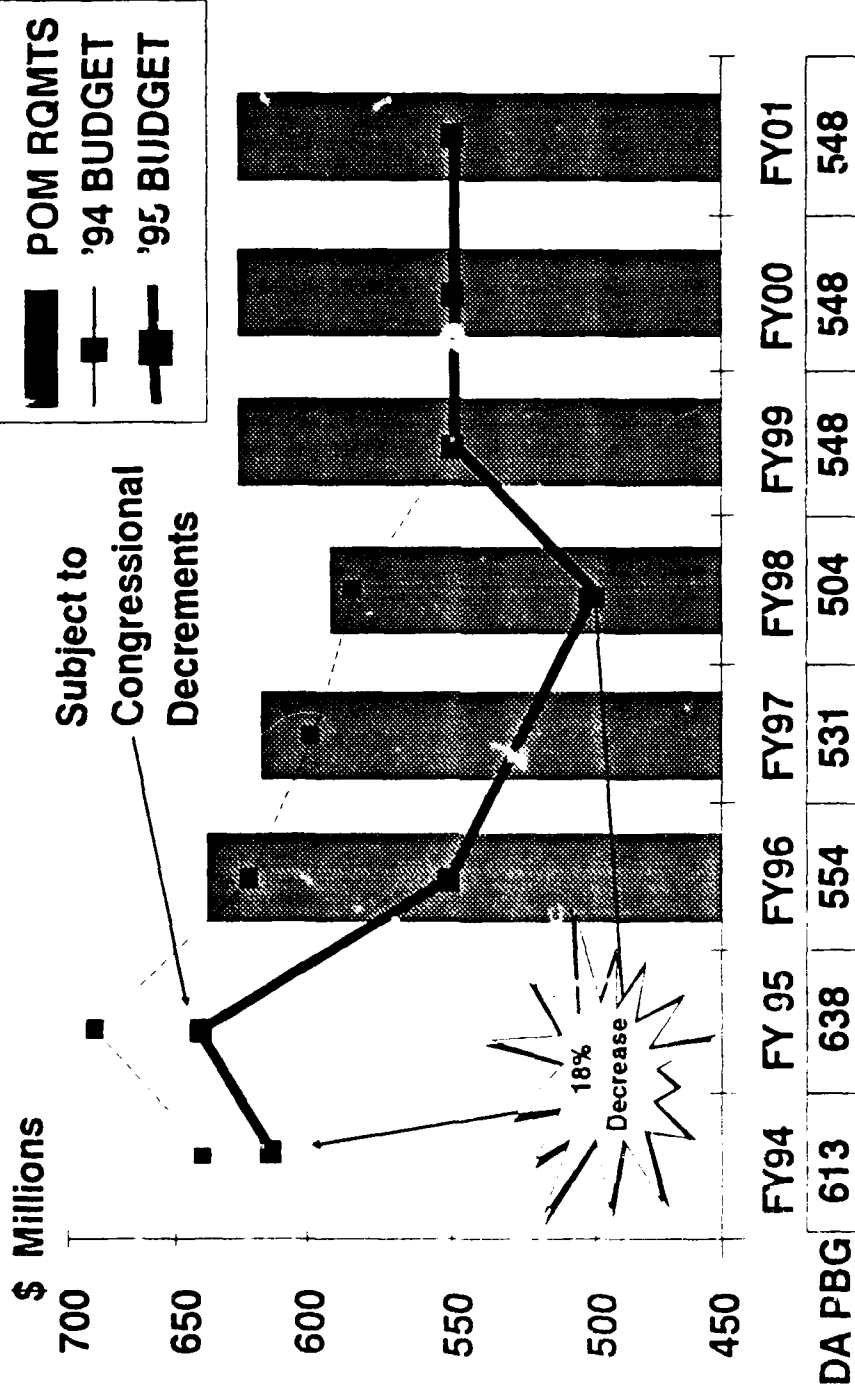
PROVIDING SMART SOLUTIONS FOR OUR CUSTOMERS



USAISMA



OMA FUNDING TRENDS

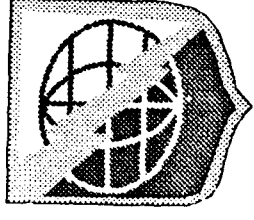


PROVIDING SMART SOLUTIONS FOR OUR CUSTOMERS



USAISMA

TOPICS



**WHITE SANDS MISSILE RANGE TEST SUPPORT NETWORK
(WSMR-TSN)**

BRIEFER: LTC DEKANTER

**PRODUCT MANAGER, WESTERN HEMISPHERE
TRANSMISSIONS SYSTEMS**

OUTSIDE CABLE REHABILITATION II (OSCAR II)

BRIEFER: COL DENNIS M. MOEN

**PROGRAM MANAGER, DEFENSE COMMUNICATIONS
AND ARMY SWITCHED SYSTEMS**

**ARMY PERSONAL COMPUTER-I (PC-I)
ARMY PORTABLE COMPUTER-I (PORTABLE-I)
SMALL MULTIUSER COMPUTER-II (SMC-II)**

BRIEFER: COL DENNIS M. MOEN

**PROJECT MANAGER, DEFENSE COMMUNICATIONS
AND ARMY SWITCHED SYSTEMS**

PROVIDING SMART SOLUTIONS FOR OUR CUSTOMERS

NOTES

WHITE SANDS MISSILE RANGE TEST SUPPORT NETWORK

LTC SCIPIO DEKANTER

**PRODUCT MANAGER,
WESTERN HEMISPHERE
TRANSMISSION SYSTEMS/**

**PROJECT MANAGER,
DEFENSE COMMUNICATIONS AND ARMY
TRANSMISSION SYSTEMS**

UNCLASSIFIED

CONTRACT OPPORTUNITIES FACT SHEET

PROGRAM MANAGER, ARMY INFORMATION SYSTEMS/ INFORMATION SYSTEMS MANAGEMENT ACTIVITY

PROGRAM: WHITE SANDS MISSILE RANGE - TEST SUPPORT NETWORK (WSMR-TSN)

This program will greatly increase the coverage of the White Sands communications network and facilitate the ability of the range to supply connectivity to its users. The current system is a collection of equipment dating from the 1950's to the present which does not provide the range coverage necessary to meet the current and projected WSMR test mission. It is manpower intensive and logistically unsupportable in key areas. The TSN will fully automate operation and maintenance of the communications system while reducing manpower requirements and increasing reliability, flexibility, maintainability, and range coverage using commercial off the shelf/non-developmental items.

POINT OF CONTACT:

Mr. Dennis Bradley, Procuring Contracting Officer, USACECOM, ATTN: AMSEL-ACCC-C-CS, Ft Monmouth, NJ 07703-5000, (908) 532-2510.

DESCRIPTION OF SYSTEM:

A high capacity SONET fiber optic backbone transmission system will connect 391 sites around the range. Circuit switching and reconfiguration will be accomplished with automated, remotely controlled digital cross connect equipment and all network equipment will be remotely controlled and maintained by an automated network management system (NMS) which can be operated by one computer terminal located in Building 123 in the main post area of the range. Additional terminals will be installed in Building 123 to augment the operability and maintainability of the NMS. Digital end to end connectivity will be provided through DS-0 to DS-1 interface devices called digital end devices (DEDs). These devices will interface to customer test and communications equipment and voice intercoms throughout the range.

STATUS:

The draft Acquisition Requirements Package (ARP) was released to CECOM on 14 March 94 and a draft Request for Proposals (RFP) was released in early April 94. The final RFP is scheduled for release in August 94 with contract award scheduled for June 95.

TYPE OF CONTRACT:

This will be a firm-fixed-price contract awarded utilizing full and open competition. The effort will be accomplished in three phases, each representing a useable segment of the overall project. The basic award will represent phase 1. Phases 2 and 3 will be options. Additional options will be provided for operations, maintenance, and repair and return of line replaceable units.

MILESTONES:

Draft RFP released to Industry	April 94
RFP released to Industry	August 94
Proposals Due	45-60 Days
Contract Award	June 95

WSMR-TSN

PROGRAM DESCRIPTION

- **A HIGH CAPACITY SONET FIBER OPTIC BACKBONE TRANSMISSION SYSTEM**
- **CIRCUIT SWITCHING AND RECONFIGURATION WILL BE ACCOMPLISHED WITH AUTOMATED, REMOTELY CONTROLLED DIGITAL CROSS CONNECT EQUIPMENT**
- **ALL NETWORK EQUIPMENT WILL BE REMOTELY CONTROLLED AND MAINTAINED BY AN AUTOMATED NETWORK MANAGEMENT SYSTEM WHICH CAN BE OPERATED FROM A SINGLE COMPUTER TERMINAL**

WSMR-TSN

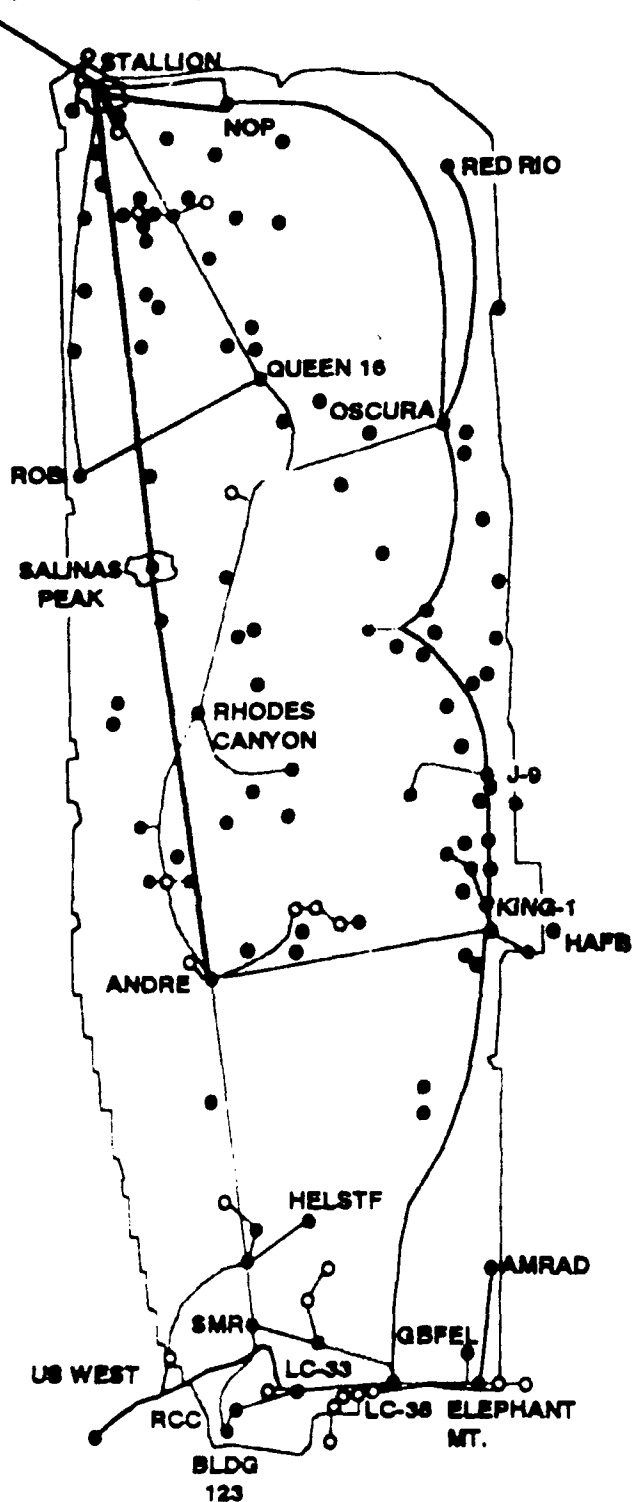
PROGRAM DESCRIPTION

(Cont 1)

- **DIGITAL END TO END CONNECTIVITY WILL BE PROVIDED THROUGH DS-0 TO DS-1 INTERFACE DEVICES CALLED DIGITAL END DEVICES (DED'S)**
- **ALL COMMERCIAL OFF THE SHELF/NON-DEVELOPMENTAL ITEMS**
- **INTEGRATED LOGISTICS SUPPORT PACKAGE: O&M OPTIONS FOR EACH PHASE IN 1 YEAR INCREMENTS**
- **THREE PHASED APPROACH**

SOCORRO
(AT&T, US WEST, DSN)

WSMR TEST SUPPORT NETWORK



WSMR-TSN

CURRENT INFORMATION SYSTEM MISSION

- **TRANSMIT INFORMATION (VOICE, TEST DATA, TELEMETRY AND VIDEO) TO AND FROM TEST SITES/LAUNCH COMPLEXES**
- **TRANSMIT INFORMATION FROM FIELD LOCATIONS/LAUNCH COMPLEXES TO VARIOUS COMMAND AND CONTROL, DATA REDUCTION AND PROCESSING CENTERS, INTERNAL AND EXTERNAL TO WSMR**

WSMR-TSN

CURRENT INFORMATION SYSTEM MISSION

(Cont 1)

- **TRANSPORT INFORMATION SECURELY IN REAL TIME
TO COOPERATING MISSION ELEMENTS:**
 - **MISSION CONTROL**
 - **MISSION OPERATIONS**
 - **RANGE SAFETY**
 - **INSTRUMENTED MEASUREMENT SYSTEMS**
 - **TARGET CONTROL SYSTEMS**
 - **DATA ANALYSIS / REDUCTION CENTERS**

WSMR-TSN

OBJECTIVES

- **IMPLEMENT AN INTEGRATED, ALL DIGITAL, AUTOMATICALLY CONTROLLED AND FULLY SUPPORTED COMMUNICATIONS NETWORK**
- **PROVIDE RANGE SIGNAL SECURITY NETWORK-WIDE**
- **DEVELOP RELIABLE AND EFFICIENT DATA INFORMATION TRANSPORT NETWORK WITH GREATER RANGE COVERAGE**
- **IMPROVE RANGE TEST RECONFIGURATION TURN-AROUND TIME**
- **PROVIDE CUSTOMERS WITH HIGH QUALITY, HIGH DATA CAPACITY, LOW COST, FASTER AND FLEXIBLE DATA ACQUISITION TRANSPORT SERVICES**

WSMR-TSN

REQUIREMENTS

- 10-11 DECEMBER 1990 MEETING BETWEEN PM TS, ISEC, ISEC-CONUS, AND WSMR-DOIM
- OPERATIONAL REQUIREMENTS DOCUMENT, DATED OCTOBER 1992
 - RANGE BACKBONE TRANSMISSION NETWORK
 - AUTOMATED TECHNICAL CONTROL FACILITIES
 - MODERNIZED RANGE INTERCOM NETWORK
 - AUTOMATED NETWORK CONTROL CENTER

WSMR-TSN

PAYOFFS

- **TECHNICAL**
 - **ACCOMMODATE PRESENT AND FUTURE TEST DATA REQUIREMENTS**
 - **REMOTELY CONTROLLED NETWORK**
 - **DIGITAL INTEGRATED NETWORK**
 - **ACCOMMODATE TECHNOLOGY INSERTION**
- **OPERATIONAL**
 - **RELIABLE AND EFFICIENT NETWORK**
 - **REAL TIME DATA TRANSMISSION AND RECOVERY**
 - **LOW COST AND SELF-HEALING CAPABILITIES**
 - **SECURITY, PROTECTION AND SAFETY**
 - **MINIMIZE MANPOWER REQUIREMENT**
- **MAINTAINABILITY**
 - **MINIMIZE EQUIPMENT DOWNTIME**
 - **TOTAL LIFECYCLE LOGISTICS SUPPORT**

CONTRACT OPPORTUNITY

- **TITLE: WHITE SANDS MISSILE RANGE-TEST SUPPORT NETWORK**
- **OBJECTIVE: TO UPGRADE THE INFORMATION SYSTEMS INFRASTRUCTURE AT WSMR TO FACILITATE RANGE OPERATIONS AND REDUCE OPERATING COSTS AND MANPOWER**
- **PROPOSED CONTRACT TYPE**
 - FFP BASIC CONTRACT FOR INITIAL PHASE
 - FP OPTIONS FOR TWO SUBSEQUENT PHASES
 - FP OPTIONS FOR OPERATION AND MAINTENANCE
 - BEST VALUE AWARD
- **KEY MILESTONES**

• DRAFT RFP RELEASED TO INDUSTRY	APRIL 1994
• RFP RELEASED TO INDUSTRY	AUGUST 1994
• PROPOSALS DUE	45-60 DAYS
• CONTRACT AWARD	JUNE 1995
- **ESTIMATED VALUE: \$50-\$150 MILLION**
 - POC: PCO, MR. DENNIS BRADLEY, CECOM, C3I ACQUISITION CENTER, FORT MONMOUTH, NJ (908) 532-2510

NOTES

OUTSIDE CABLE REHABILITATION II (OSCAR II)

COL DENNIS M. MOEN
PROJECT MANAGER
DEFENSE COMMUNICATIONS
AND
ARMY SWITCHED SYSTEMS

UNCLASSIFIED

POINT PAPER

SUBJECT: Outside Cable Rehabilitation (OSCAR) II

OBJECTIVE: Provide users with a flexible, easy to use contract vehicle to upgrade and rehabilitate inside/outside cable plants and networks in support of the Power Projection, Command, Control, Communication & Computer Synchronization (P2C4I) program.

FACTS:

- * The contract will have provisions to repair and replace existing cable plants
- * The contract will have the capability of initiating new work (i.e. OPA funding) in order to allow the engineering, installation and testing of new equipment/cable which will allow the installed network to tie into existing and proposed data communication networks.
- * Actions to be taken in FY94 include:
 - Issue Draft Request for Proposal (RFP)
 - Issue final RFP
- * Actions to be taken in FY 95 include:
 - Evaluation of Proposals
 - Contract Award

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SW

BEST AVAILABLE COPY

OSCAR II

PROVIDE AN FFP ID/IQ CONTRACT
FOR THE REPAIR, REPLACEMENT
AND UPGRADING OF OUTSIDE AND
INSIDE CABLE PLANT IN SUPPORT
OF THE POWER PROJECTION,
COMMAND, CONTROL, COMMUNICATIONS,
AND COMPUTERS INFRASTRUCTURE
(P2C4I) INITIATIVE

OSCAR II

OBJECTIVES

- **COMPREHENSIVE CABLE PACKAGE**
- **SINGLE SYSTEM INTEGRATOR**
- **FIRM FIXED PRICED CLINS –
INDEFINITE DELIVERY /
INDEFINITE QUANTITY**
- **BASE YEAR / 4 OPTION YEARS**
- **CONUS BASED**
- **MULTI-SERVICE ACCESS**

OSCAR II

REQUIREMENTS

- STATE-OF-THE-ART COMMERCIAL OFF-THE-SHELF (COTS) TECHNOLOGY
- COPPER CABLE
- FIBER OPTIC CABLE
(SINGLE MODE/ MULTI MODE)

OSCAR II

REQUIREMENTS

- ASSOCIATED END EQUIPMENT
 - MULTIPLEXERS
 - SUBSCRIBER CARRIER AND CHANNEL BANK SYSTEMS
- ELECTRONIC NETWORK INTERFACING EQUIPMENT
- CONTRACTOR E, F, I & T

CONTRACT OPPORTUNITY

TITLE: OUTSIDE CABLE REHABILITATION II (OSCAR II)

**OBJECTIVE: PROVIDE A COMPREHENSIVE CONTRACT
VEHICLE FOR THE REPLACEMENT
& UPGRADE OF CONUS BASED
INFRASTRUCTURE, TO INCLUDE CABLE
PLANT AND NETWORKING EQUIPMENT**

PROPOSED

**CONTRACT TYPE: FIRM FIXED PRICE - INDEFINITE
DELIVERY /INDEFINITE QUANTITY**

**KEY MILESTONES: REQUEST FOR PROPOSAL 4TH QTR FY94
AWARD 4TH QTR FY95**

ESTIMATED VALUE: EXCESS OF \$150M

**POC: MR. DARYL LENTZ, ISC OA (717) 878-4271
FT RITCHIE, MD (ASPC-RA-SPR)**

NOTES

ARMY PERSONAL COMPUTER-1 (PC-1)

COL DENNIS M. MOEN
PROJECT MANAGER
DEFENSE COMMUNICATIONS
AND
ARMY SWITCHED SYSTEMS

UNCLASSIFIED

POINT PAPER

SUBJECT: Army Personal Computer Contract - 1 (PC-1)

OBJECTIVE: PC-1 is the acquisition of Commercial- Off-The-Shelf (COTS) general purpose personal computers, peripherals, operating systems and office automation software in support of the Army's mission.

FACTS:

- * Information Mission Area (IMA) certified products that will support current and next generation of software under POSIX/DOS OSs as well as to replace the aging fielded PC base within the Army.

- * All CPUs, monitors and printers will be Energy Star compliant.

- * Milestones listed below reflect the planned schedule for PC-1. All schedules are planned to provide IDIQ contract coverage for Army users worldwide within the guidelines of the DoD Personal Computer Policy Implementation Plan, FY 1994-FY 1999.

RFP Release	3RD QTR - FY94
Contract Awards	2ND QTR - FY95

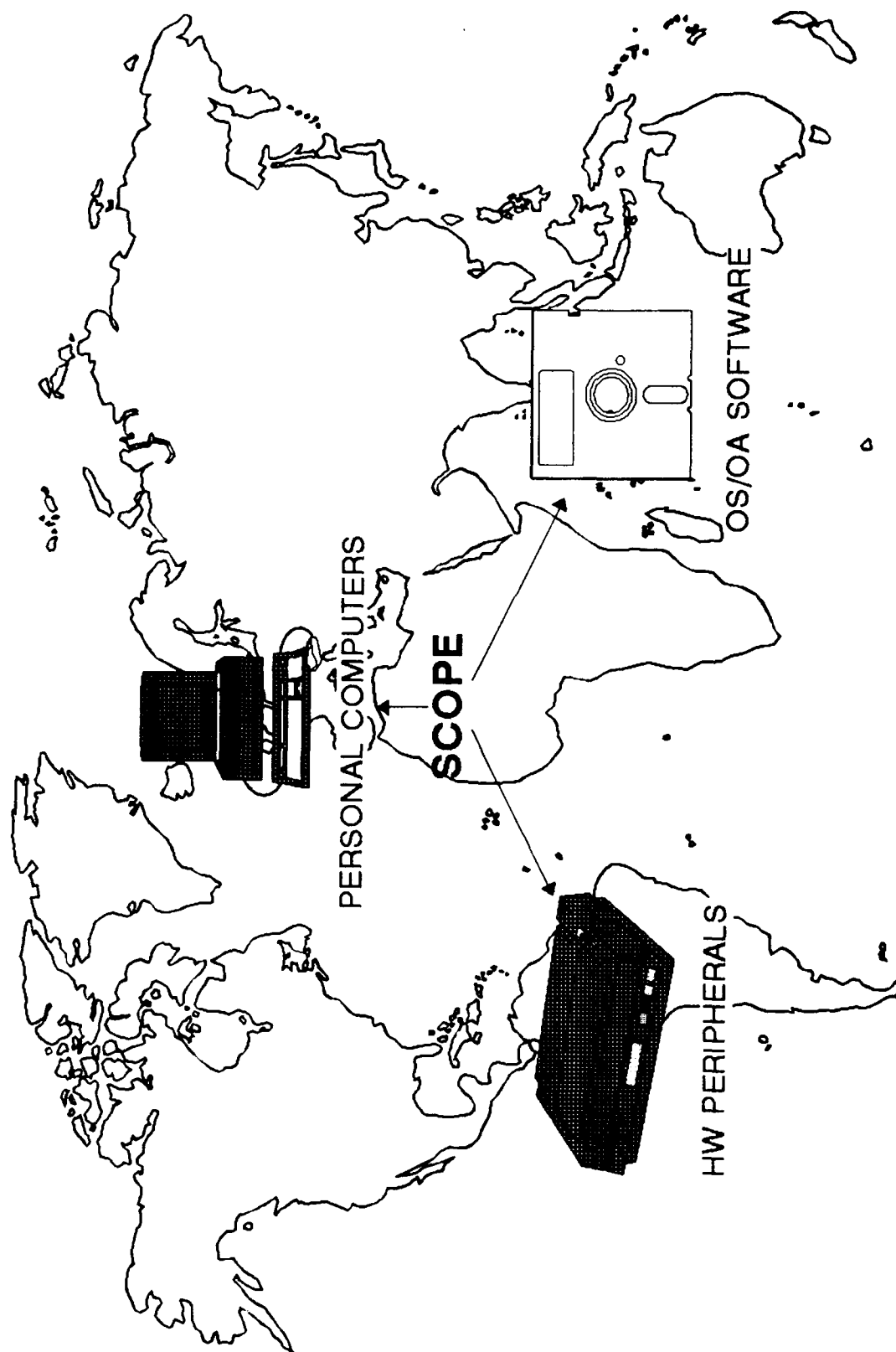
- * This will be a Firm-Fixed-Price, Indefinite Delivery/Indefinite Quantity contract. It will be a Best Value evaluation with two awards. Each winning vendor will supply the full CLIN requirement over two years.

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SWM, (908) 532-7910

PC-1

ACQUISITION OF COMMERCIAL OFF-THE-SHELF (COTS) GENERAL PURPOSE PERSONAL COMPUTERS AND PERIPHERALS IN SUPPORT OF THE ARMY'S MISSION

PC-1



PC-1

OBJECTIVES

- **SUPPORT NEXT GENERATION OF SOFTWARE UNDER POSIX AND DOS OPERATING SYSTEMS**
- **ALL COMMERCIAL OFF-THE-SHELF (COTS) PRODUCTS**
- **FFP ID/IQ CONTRACT (BEST VALUE AWARD)**

PC-1

OBJECTIVES

- **DUAL AWARD (TWO CONTRACTORS)**
- **2 YEAR HW/SW ORDERING**
- **24 MONTH MINIMUM WARRANTY**
- **FIRM FIXED PRICE (FFP) INDEFINITE DELIVERY/INDEFINITE QUANTITY (ID/IQ) (BEST VALUE AWARD)**

PC-1

REQUIREMENTS

- STATE-OF-THE-ART PLATFORMS-COTS
 - HARDWARE
 - SOFTWARE
 - – SINGLE USER OPERATING SYSTEMS
 - – MULTI-USER OPERATING SYSTEMS
- OPEN SYSTEMS STANDARDS
 - COMPLIANCE
 - GOVERNMENT OPEN SYSTEMS INTERCONNECTION PROFILE (GOSIP)
 - PORTABLE OPERATING SYSTEM INTERFACE FOR COMPUTER ENVIRONMENT (POSIX)

PC-1 REQUIREMENTS

- **SYSTEMS CONFIGURATIONS:**
 - **BUNDLED PC**
 - **USER-CONFIGURED PC**
- **PERIPHERALS:**
 - **15" AND 17" MONITORS**
 - **PRINTERS**
 - **PERSONAL COMPUTER MEMORY CARD
INTERNATIONAL ASSOCIATION
(PCMCIA II)**

CONTRACT OPPORTUNITY

TITLE: ARMY PERSONAL COMPUTER-1 (PC-1)

**OBJECTIVE: SUPPORT NEXT GENERATION
OF SOFTWARE UNDER POSIX/DOS OS**

PROPOSED

**CONTRACT TYPE: FFP ID/IQ (BEST VALUE AWARD)
COTS HW/SW**

**KEY MILESTONES: RFP RELEASE 3QTR FY 94
AWARD 2QTR FY 95**

ESTIMATED VALUE: \$350M-\$550M

**POC: HELEN GARAMONE, ISSAA (703) 325-9762
ALEXANDRIA, VA (ISSA-PAO)**

**ARMY PORTABLE
COMPUTER-1
(PORTABLE-1)**

UNCLASSIFIED

POINT PAPER

SUBJECT: Army Portable Computer Contract - 1 (Portable-1)

OBJECTIVE: Portable-1 is the acquisition of Commercial-Off-The-Shelf (COTS) general purpose notebook and handheld computers, software and peripherals in support of the Army's mission.

FACTS:

- * Information Mission Area (IMA) certified products that will support the Army's portable requirements worldwide.

- * All CPUs and printers will be Energy Star compliant.

- * Milestones listed below reflect the planned schedule for Portable-1. All schedules are planned to provide IDIQ contract coverage for Army users worldwide within the guidelines of the DoD Personal Computer Policy Implementation Plan, FY 1994-FY 1999.

RFP Release	3RD QTR - FY94
Contract Awards	2ND QTR - FY95

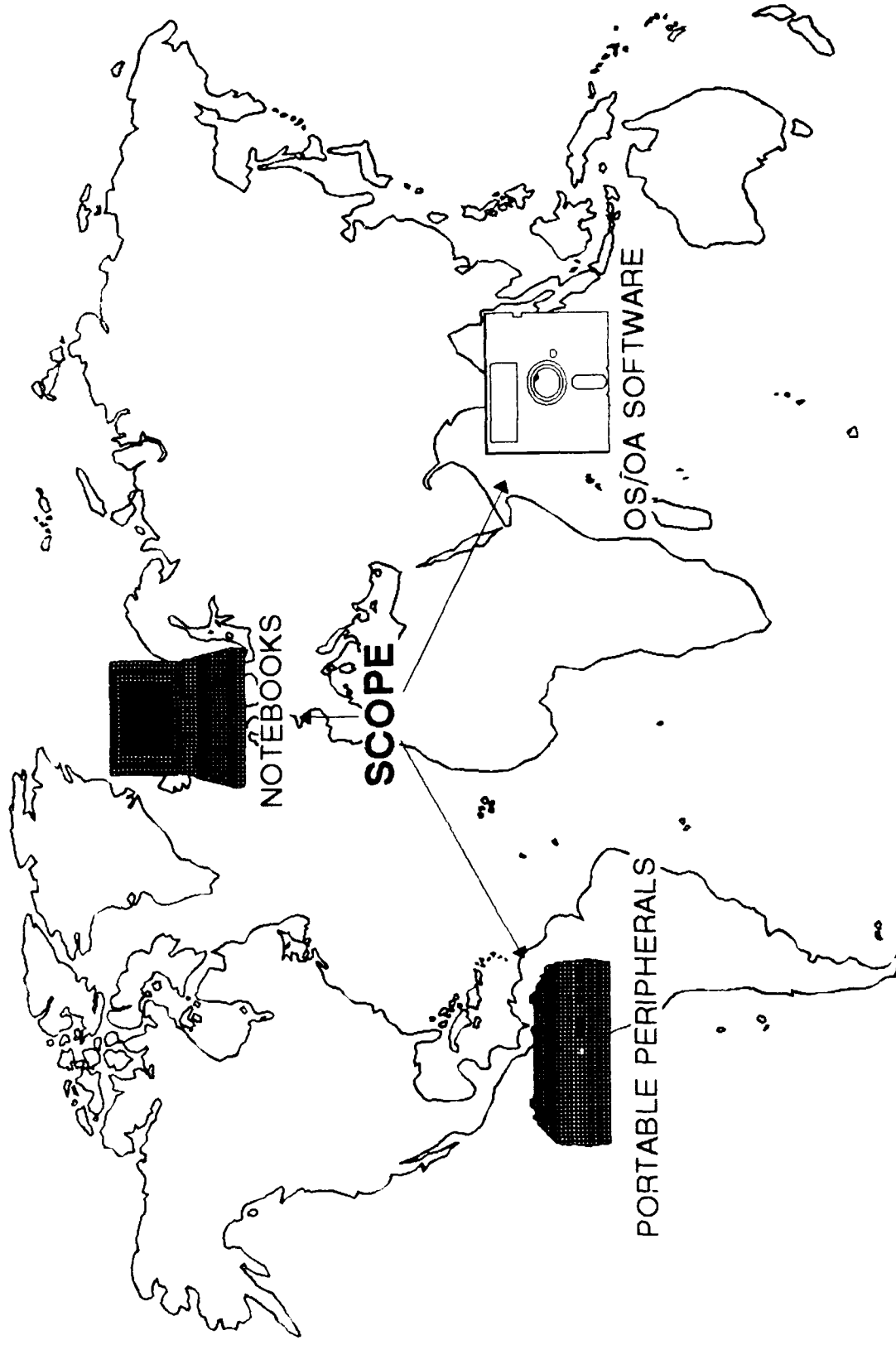
- * This will be a Firm-Fixed-Price, Indefinite Delivery/Indefinite Quantity contract. It will be a Best Value evaluation with two awards. Each winning vendor will supply the full CLIN requirement over two years.

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SWM, (908) 532-7910

PORTABLE-1

**ACQUISITION OF COMMERCIAL OFF-THE-SHELF (COTS) GENERAL PURPOSE
NOTEBOOK AND HANDHELD COMPUTERS
AND PERIPHERALS IN SUPPORT OF THE
ARMY'S MISSION**

PORTABLE-1



PORTABLE-1 REQUIREMENTS

- STATE-OF-THE-ART PLATFORMS-COTS
 - HARDWARE
 - SOFTWARE
 - CARRYING CASES

PORTABLE-1

REQUIREMENTS

- **SYSTEMS CONFIGURATIONS:**
 - **NOTEBOOK (MONOCHROME)**
 - **NOTEBOOK (COLOR)**
 - **HANDHELD**
- **PERSONAL COMPUTER MEMORY CARD
INTERNATIONAL ASSOCIATION
(PCMCIA II) INTERFACE:**
 - **MODEM WITH SOFTWARE**
 - **RANDOM ACCESS MEMORY (RAM)**
 - **HARD DRIVE**
 - **FAX WITH SOFTWARE**
 - **NETWORK INTERFACE CARD**

CONTRACT OPPORTUNITY

TITLE: ARMY PORTABLE COMPUTER-1 (PORTABLE-1)

**OBJECTIVE: SUPPORT THE ARMY'S REQUIREMENT FOR
PORTABLE COMMUNICATION AND
COMPUTING CAPABILITIES**

PROPOSED

**CONTRACT TYPE: FFP ID/IQ (BEST VALUE AWARD)
COTS HW/SW**

**KEY MILESTONES: RFP RELEASE 3QTR FY 94
AWARD 2QTR FY 95**

ESTIMATED VALUE: \$100M-\$150M

**POC: HELEN GARAMONE, ISSAA (703) 325-9762
ALEXANDRIA, VA (ISSA-PAO)**

SMALL MULTIUSER COMPUTER-II (SMC-II)

UNCLASSIFIED

POINT PAPER

SUBJECT: Army Small Multiuser Computer-II (SMC-II)

OBJECTIVE: SMC-II is the acquisition of Commercial-Off-The-Shelf (COTS) multiuser computer equipment and software, networking components, and engineering services to support Army, Navy, Air Force, and DoD agencies office automation requirements.

FACTS:

- * Information Mission Area (IMA) certified products that will support worldwide Army network server/software requirements. This acquisition will follow the SMC-I contract which is scheduled to expire at the end of FY 95.

- * All monitors and printers will be Energy Star compliant.

- * Milestones listed below reflect the planned schedule for SMC-II. All schedules are planned to provide IDIQ contract coverage for Army users worldwide.

Draft RFP Release	4TH QTR - FY94
RFP Release	1ST QTR - FY95
Contract Award	4TH QTR - FY95

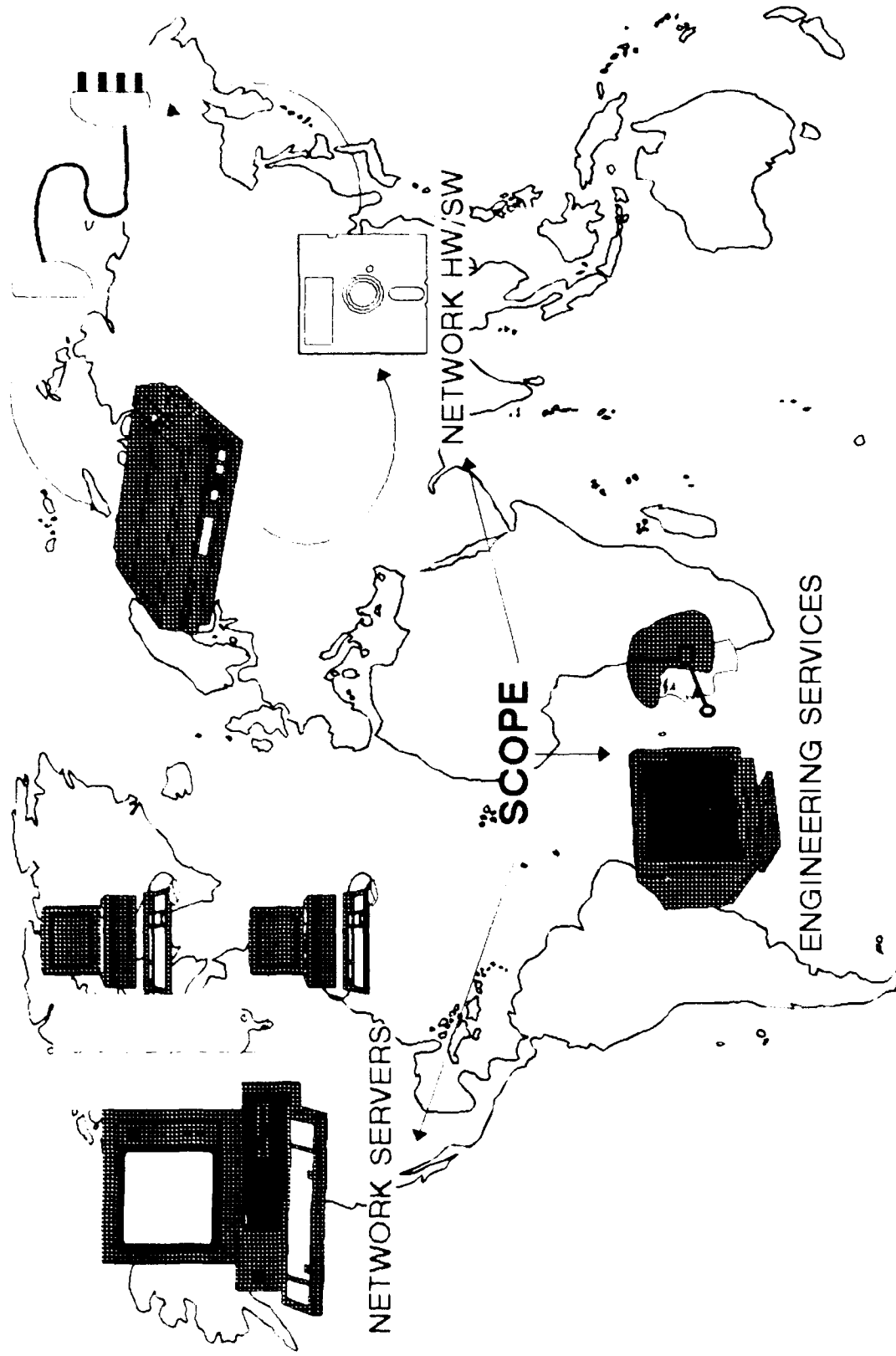
- * This will be a Firm-Fixed-Price, Indefinite Delivery/Indefinite Quantity contract. It will be a Best Value evaluation with one award. The contract is planned to run three years for HW/SW ordering, five years altogether for engineering services and warranty/maintenance.

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SWM, (908) 532-7910

SMC-II

ACQUISITION OF COMMERCIAL OFF-
THE-SHELF (COTS) MULTIUSER
COMPUTER EQUIPMENT AND SOFTWARE,
NETWORKING COMPONENTS,
AND ENGINEERING SERVICES TO
SUPPORT ARMY, NAVY, AIR FORCE,
AND DOD AGENCIES' OFFICE
AUTOMATION REQUIREMENTS

SMC-II



SMC-II

OBJECTIVES

- **SUPPORT ARMY, NAVY, AIR FORCE,
AND DOD AGENCIES' OFFICE
AUTOMATION AND NETWORK
REQUIREMENTS**
- **ALL COMMERCIAL OFF-THE-SHELF
(COTS)**
- **FFP ID/IQ (BEST VALUE AWARD)**
- **SINGLE AWARD**
- **3 YR-HW/SW ORDERING/5 YR-
ENGINEERING AND MAINTENANCE
SUPPORT**
- **24 MONTH MINIMUM WARRANTY**

SMC-II

REQUIREMENTS

- STATE-OF-THE-ART PLATFORMS-COTS
 - HARDWARE
 - MULTIUSER OPERATING SYSTEMS
- OPEN SYSTEMS STANDARDS COMPLIANCE
 - GOVERNMENT OPEN SYSTEMS INTERCONNECTION PROFILE (GOSIP)
 - PORTABLE OPERATING SYSTEM INTERFACE FOR COMPUTER ENVIRONMENT (POSIX)

SMC-II REQUIREMENTS

- **NETWORK SERVERS**
- **NETWORKING COMPONENTS**
- **ENGINEERING SERVICES**
- **MAINTENANCE**
- **TRAINING**

CONTRACT OPPORTUNITY

**TITLE: SMALL MULTIUSER COMPUTER -II
(SMC-II)**

**OBJECTIVE: ARMY/JOINT SERVICE NETWORK
SERVERS/SOLUTIONS FOR OFFICE
AUTOMATION REQUIREMENTS**

PROPOSED

**CONTRACT TYPE: FFP ID/IQ (BEST VALUE AWARD)
COTS**

**KEY MILESTONES: DRAFT RFP RELEASE-4TH QTR FY 94
RFP RELEASE-1ST QTR FY 95
AWARD-4TH QTR FY 95**

ESTIMATED VALUE: \$600M-\$800M

**POC: HELEN GARAMONE, ISSAA (703) 325-9762
ALEXANDRIA, VA (ISSA-PAO)**

NOTES

SESSION VI

SUSTAINING THE BATTLEFIELD

MODERATOR

MR. COLIN F. MACDONNELL, JR.
DIRECTOR
C3I LOGISTICS AND READINESS
CENTER
CECOM

CECOM
SUSTAINING THE BATTLEFIELD



C. F. MacDONNELL, JR., DIRECTOR

12 MAY 1994

U.S. ARMY COMMUNICATIONS ELECTRONICS COMMAND

C3I LOGISTICS & READINESS CTR



01 MAR 94

HEADQUARTERS
DIR. C. MacDONNELL
DEP COL A. FOLLMER
ASSOC. DIRS
C. KALWINSKY
T. LAPLACA
DSN 992-5757 AMSEL-LC

CECOM CALS SPT
OFC
J. BARBARELLO
CALS EXEC
R. ULDRICH
PRINCIPAL

LOG & MAINT
AMSEL-LC-LM
COL G. BROWN
DSN 992-1212

MATERIEL MGT
AMSEL-LC-MM
R. RIEHL
DSN 992-4755

READINESS
AMSEL-LC-RE
COL
N. SOUTHERLAND
DSN 992-5162

SYSTEMS MGT
AMSEL-LC-SM
K. MORGAN
DSN 992-2332

SECURITY ASSISTANCE
AMSEL-LC-SA
E. BENNETT
DSN 992-2155

PRODUCT INTEGRITY & PROD ENGR
AMSEL-LC-ED
G. STOOPS
DSN 992-5193

COMM SEC LOG ACTIVITY
SELCL-DIR
D. DION
DSN 879-6131

INTELLIGENCE MAT MGT CTR
SELIM-DR
L. SCHEUBLE
DSN 229-5011

VINT HILL
 FARMS, VA

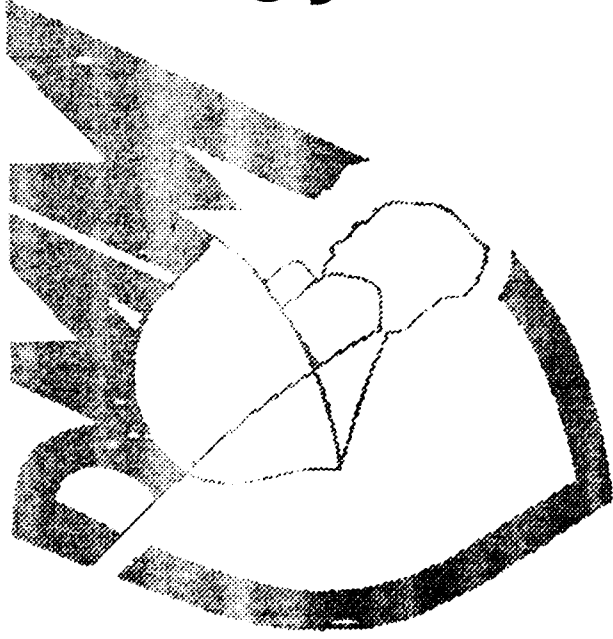
FT. HUACHUCA, AZ

SUSTAINING THE BATTLEFIELD



- ▶ SPARES - Mr. William Riehl, Dir
Materiel Management
- ▶ BATTERY SELECTION AND POWER
MANAGEMENT IN MAJOR SYSTEMS
TO REDUCE O&S COSTS -
Mr. Richard Rizzo, SMD
AMC Battery Focal Point
- ▶ OPPORTUNITIES IN FOREIGN
MILITARY SALES -
Mr. Eugene Bennett, Dir, SAMD

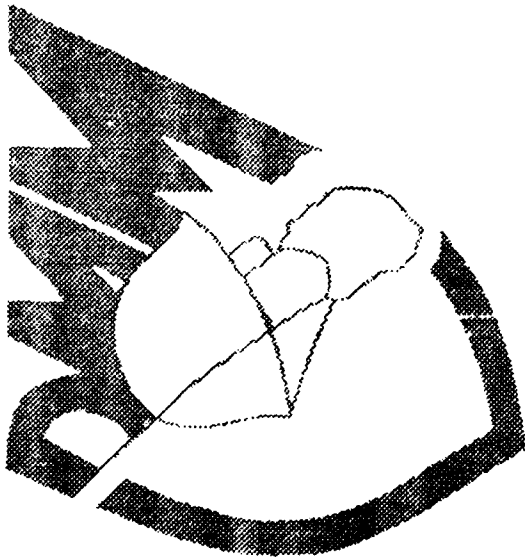
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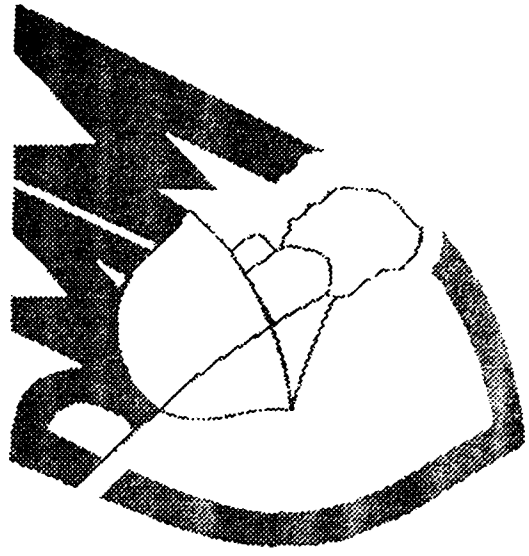
SPARES

WILLIAM RIEHL
Director, Materiel Management

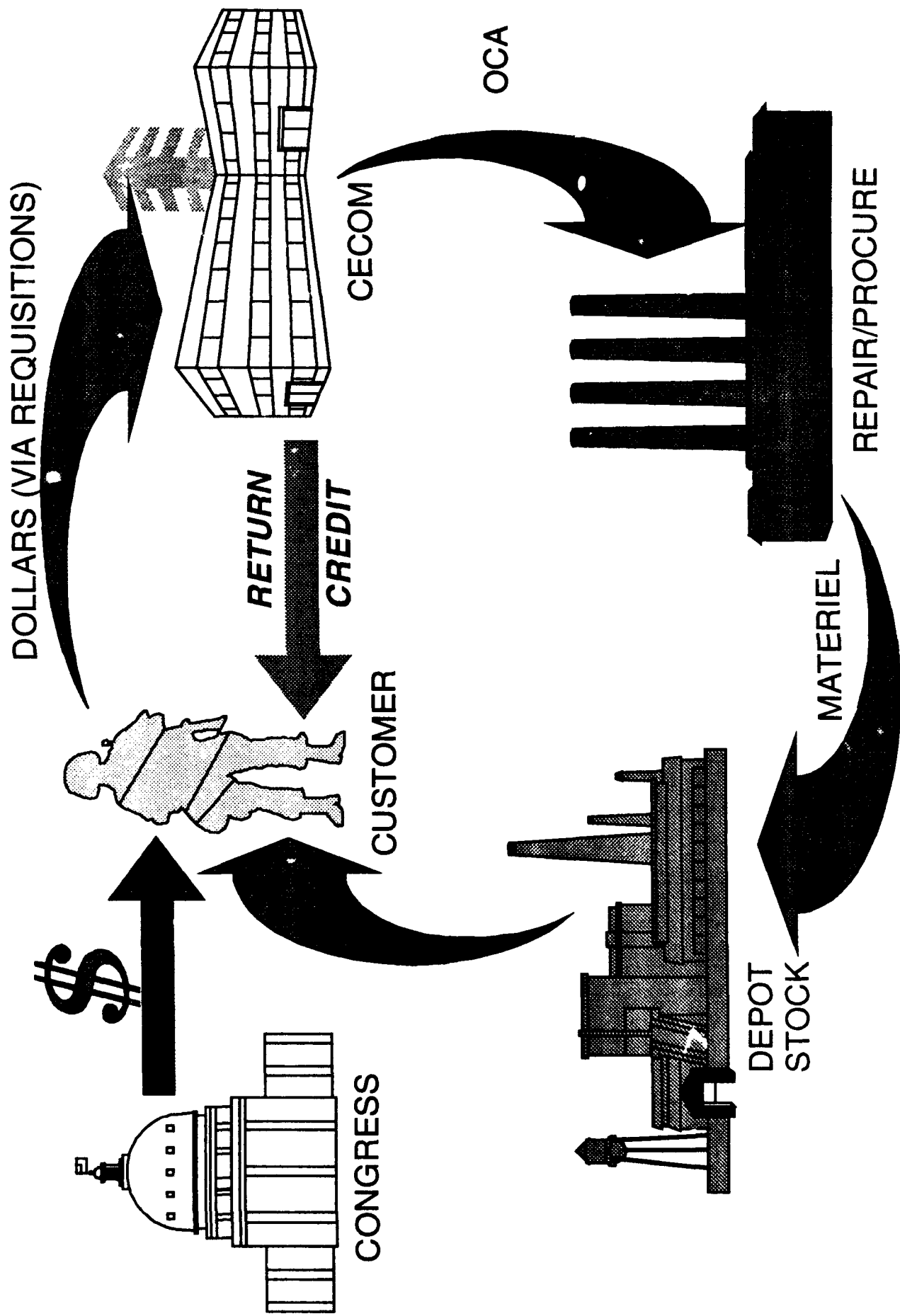
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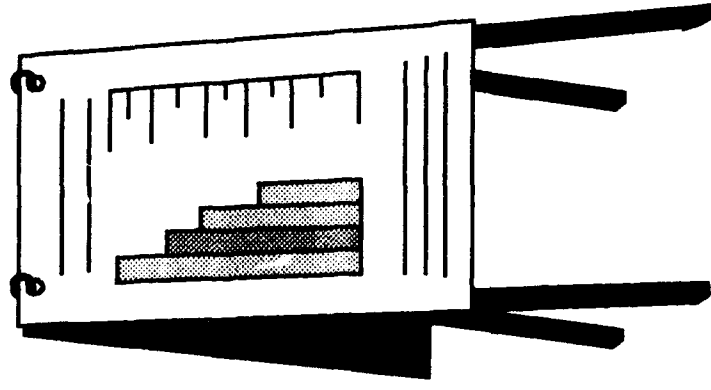
Requirements



ARMY STOCK FUND--REVOLVING FUND

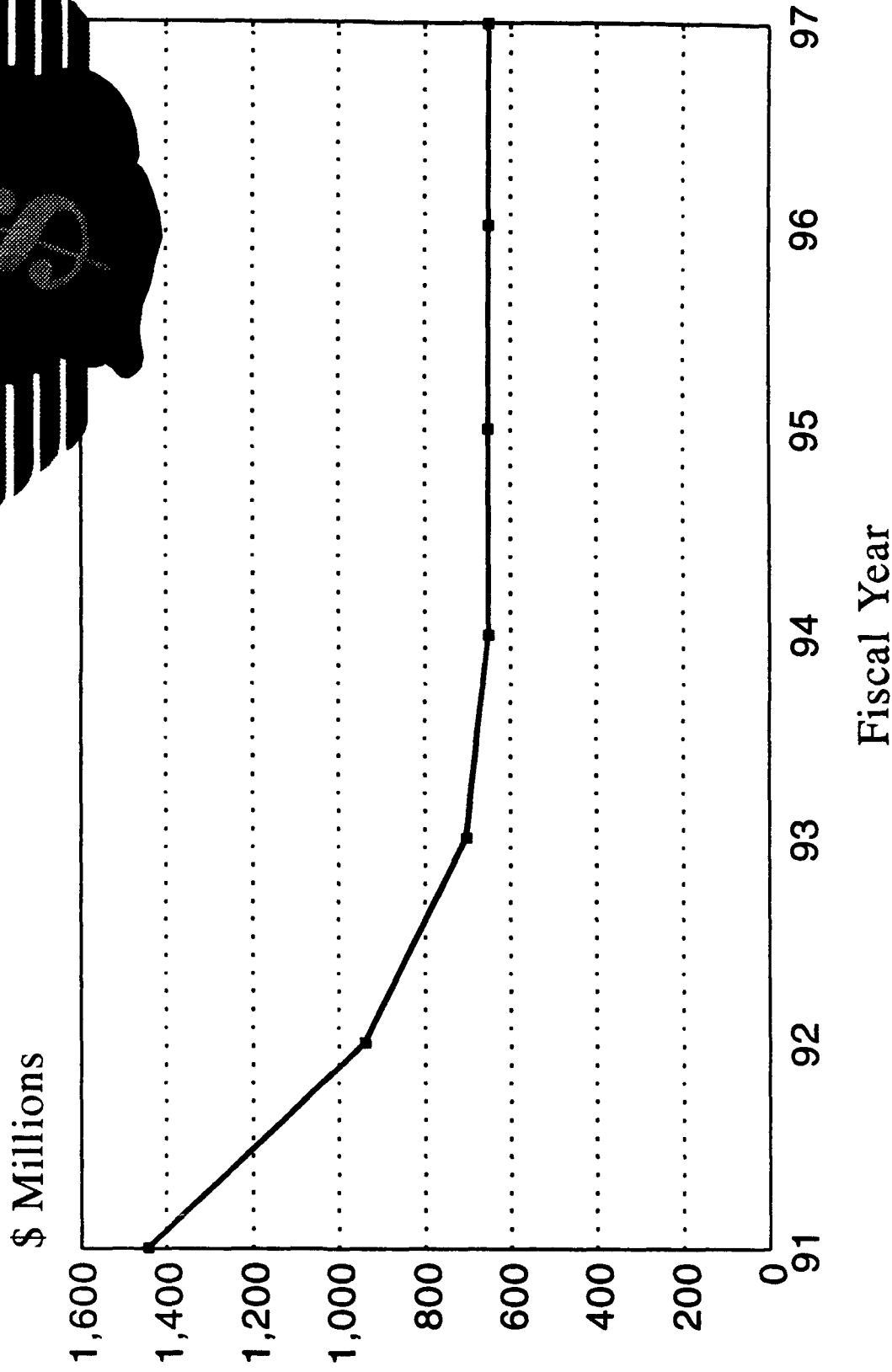
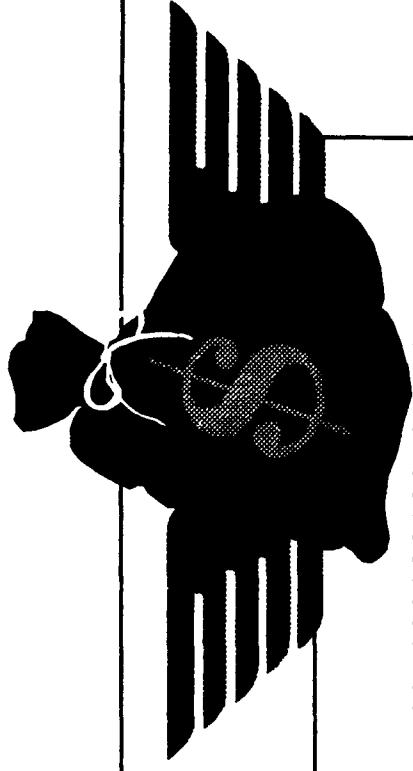


CURRENT/FUTURE BUSINESS INDICATORS



- Force Structure ▼
- Income (Sales) ▼
- Acquisition Dollars ▼
- # of Procurements/
Repair Contracts ▼
- Inventory Levels ▼

SPARE/REPAIR PARTS SALES

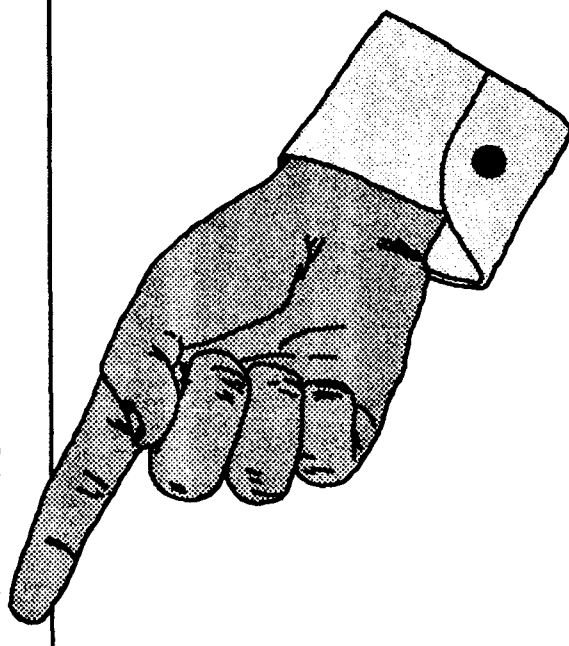


FORECASTED REQUIREMENTS PROFILE

FY95 SPARES (\$IN MILLIONS)

WEAPON SYSTEMS	\$ RANGE
COMMUNICATIONS	\$45 - \$59
(incl switches,MSE,Radios, TRI-TAC, etc.)	
RADAR/SENSOR	\$40 - \$58
AVIONICS	\$30 - \$47
BATTERIES	\$25 - \$32
NIGHT VISION	\$21 - \$33
SATELLITE COMM	\$19 - \$23
TOTAL	\$180 -\$252

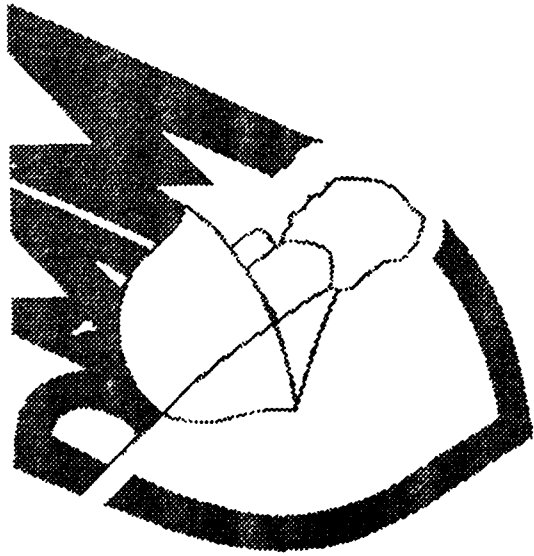
REQUIREMENTS



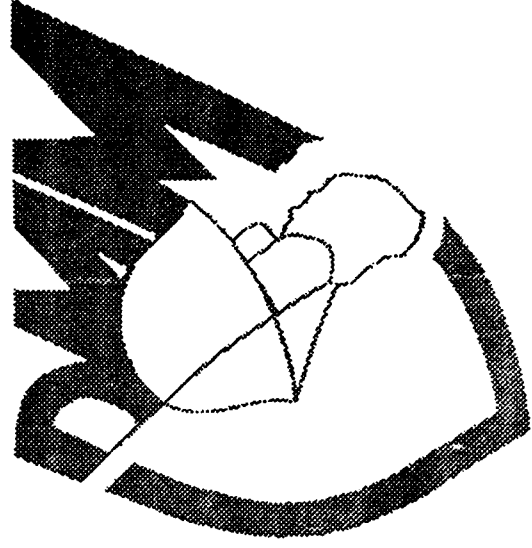
- Flexibility in contracts to allow for changing environment
- Become more efficient (e.g., Just In Time Inventory/Direct Vendor Deliveries concepts)
- POC: William Riehl, Director, Materiel Management
(908)532-4755, Fort Monmouth, New Jersey

IMPLEMENTING STRATEGIES

- Group spares by weapon system or technical commonality
- Buy 3-5 years on one contract with range quantities
- Electronic Bulletin Board to solicit spares buys
Digitized drawings/master plans
- Push Technology Insertion to reduce Operations and Support (O&S) costs



Consolidations



CONSOLIDATIONS

Description

- Flexible approach to secondary item acquisition
- Best overall value
- Preserve industry engineering expertise
- Continuous process improvement
- Long term business relationships
- Fewer contracting actions
- Reduced Operations and Support (O&S) costs

CONSOLIDATIONS

Objectives

- Reduced risk to government
- Shorter leadtimes
- Lower overall costs
- Simplification
- Standardization

CONTRACT OPPORTUNITY

AN/APR-39A(V)1

- Proposed Contract type:
 - Competitive with 5 option years min/max quantities
- Milestones
 - Solicitation: April 94
 - Forecast award: Nov 94
- Estimated value
 - FY95 \$21K - \$2.6M
 - FY96 thru FY 99: \$21K - \$1.3M annually
- POC: Ted Kordower, (908)532-1984

CONTRACT OPPORTUNITY

Aviators' Night Vision Imaging System (ANVIS) Kits

- Proposed Contract Type:
 - Competitive Indefinite Delivery/Indefinite Quantity
Best Value
- Milestones
 - Draft Request for Proposal (RFP): April 94
 - Forecast award: Dec 94
- Estimated value
FY95 thru FY99: \$957K - \$8.4M annually
- POC: Bruce Kueller, (908)532-1257

CONTRACT OPPORTUNITY

AN/TTC/TYC-39

- Proposed Contract type:
 - Competitive, 5 year Indefinite Delivery/
Indefinite Quantity, Best Value
- Milestones
 - Solicitation: Aug 94
 - Forecast award: Nov 94
- Estimated value
 - FY95 \$0 - \$310K
 - FY96 \$0 - \$326K
 - FY97 \$0 - \$342K
 - FY98 \$0 - \$359K
 - FY99 \$0 - \$377K
- POC: Stephanie J. Allen, (908)532-4304

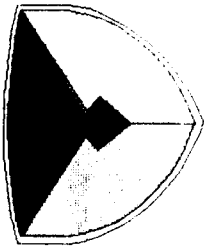
CONTRACT OPPORTUNITY

AN/VRC-12 Radios

- Proposed Contract type:
 - Competitive, multiple year with range quantities
- Milestones
 - Forecast solicitation: FY95
 - Forecast award: FY96
- Estimated value
 - FY96 \$4.5M
 - FY97 \$1.6M
 - FY98 \$1.3M
 - FY99 \$1.0M
 - FY00 \$3.0M
 - FY01 \$.3M
- POC: Pete Kasper, (908)542-6558

NOTES

AMC



**BATTERY SELECTION
AND
POWER MANAGEMENT
IN MAJOR SYSTEMS
TO REDUCE O&S COSTS**

**MR. RICHARD RIZZO
AMC BATTERY FOCAL POINT
SYSTEMS MANAGEMENT DIRECTORATE
UNCLASSIFIED**

FIELD CONCERNS

**BATTERY
COSTS**

**IMPROVED
PERFORMANCE**

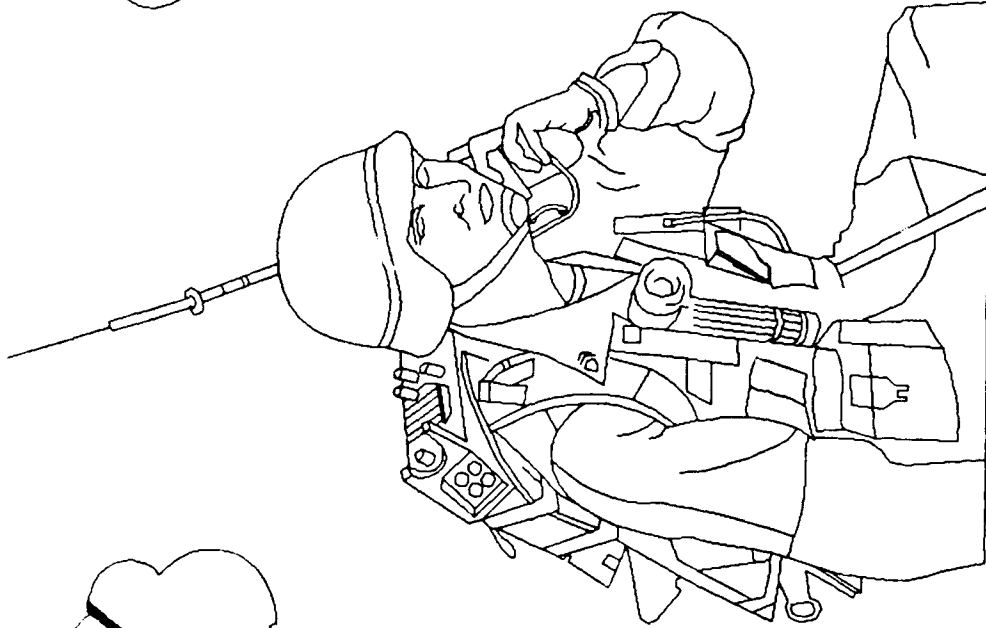
DISPOSAL

WEIGHT

**UNUSED
CAPACITY**

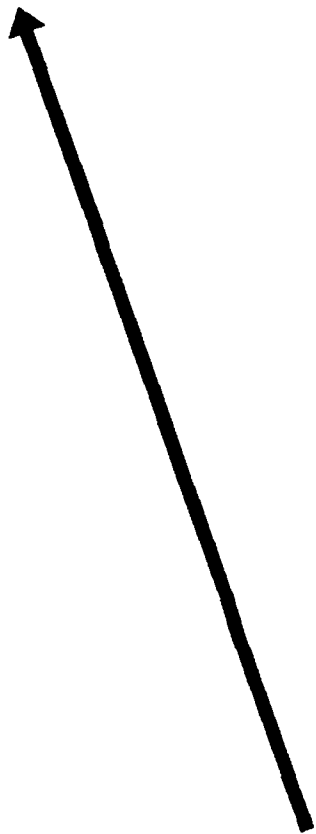
MAINTENANCE

PROLIFERATION



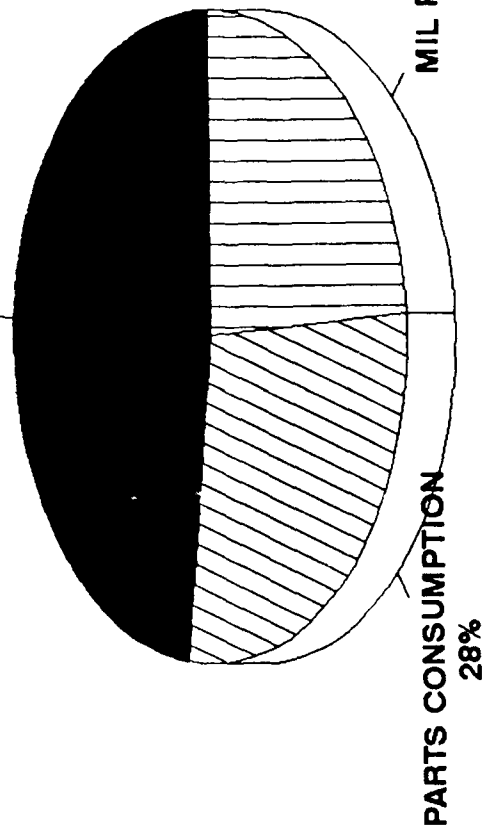
THE PROBLEM

% OF FIELD BUDGET



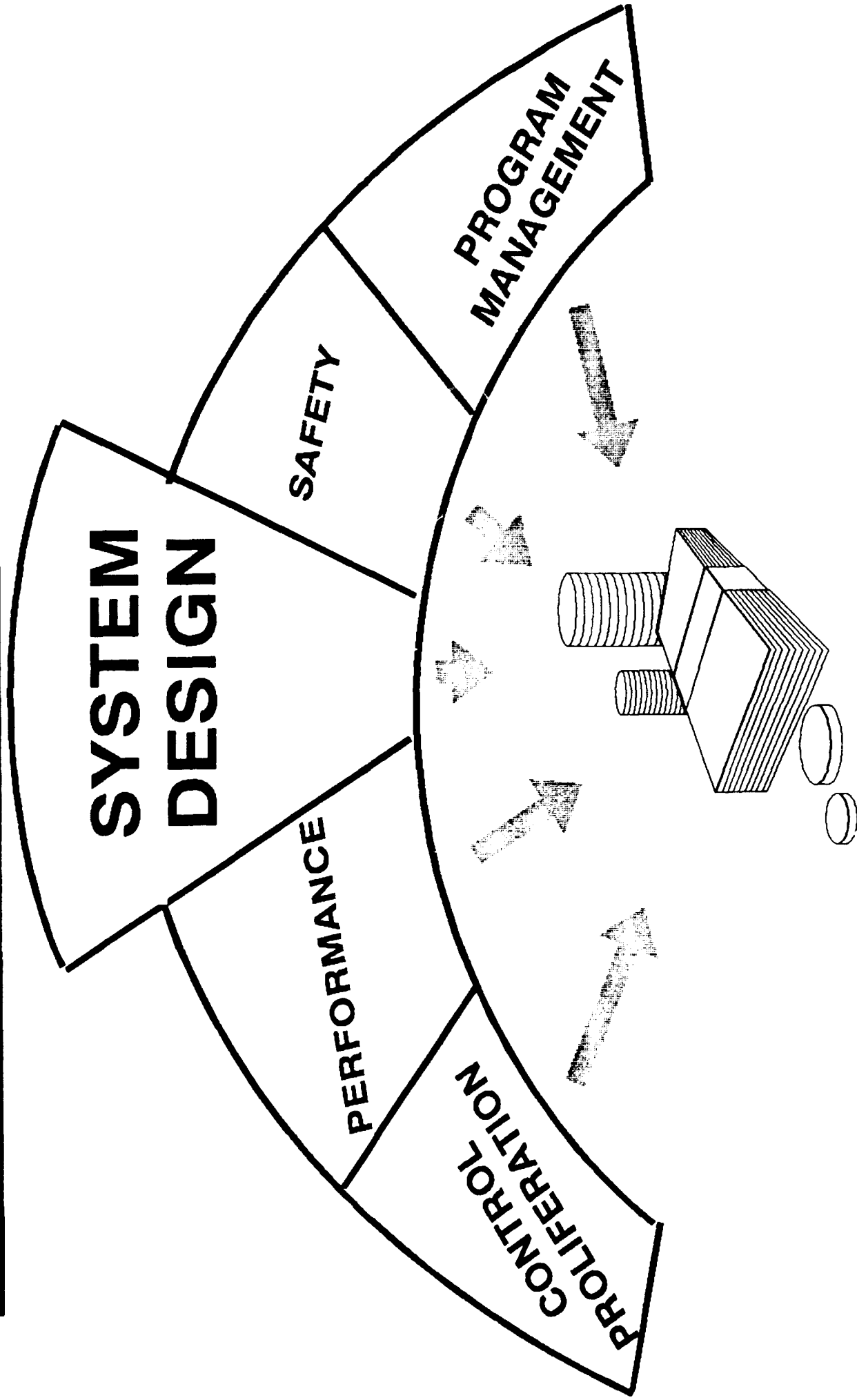
BATTERY RELATED O&S COSTS

BATTERY CONSUMPTION
48%



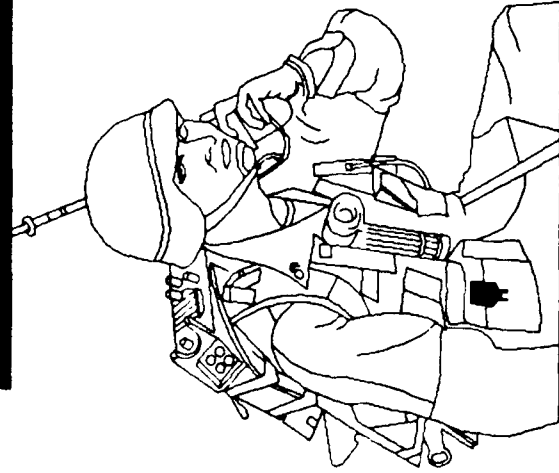
TYPICAL FIELD USAGE

ARMY BATTERY MODERNIZATION STRATEGY

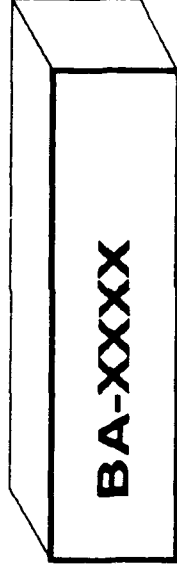
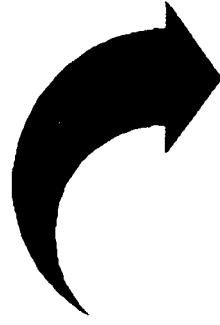


REDUCING O&S COSTS

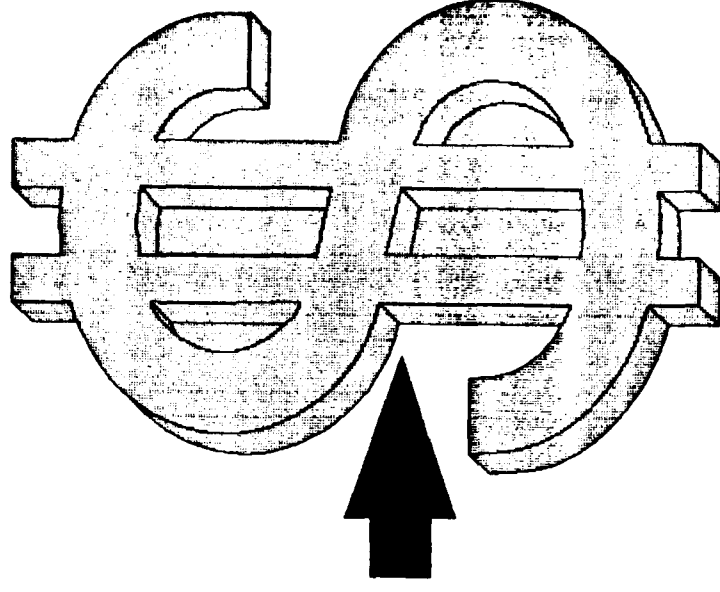
BATTERY COST DRIVERS



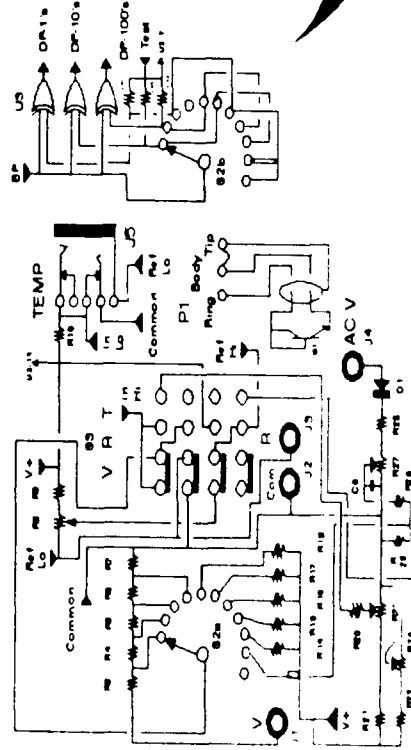
**USER
REQUIREMENTS**



**MILITARY
UNIQUE
BATTERIES**

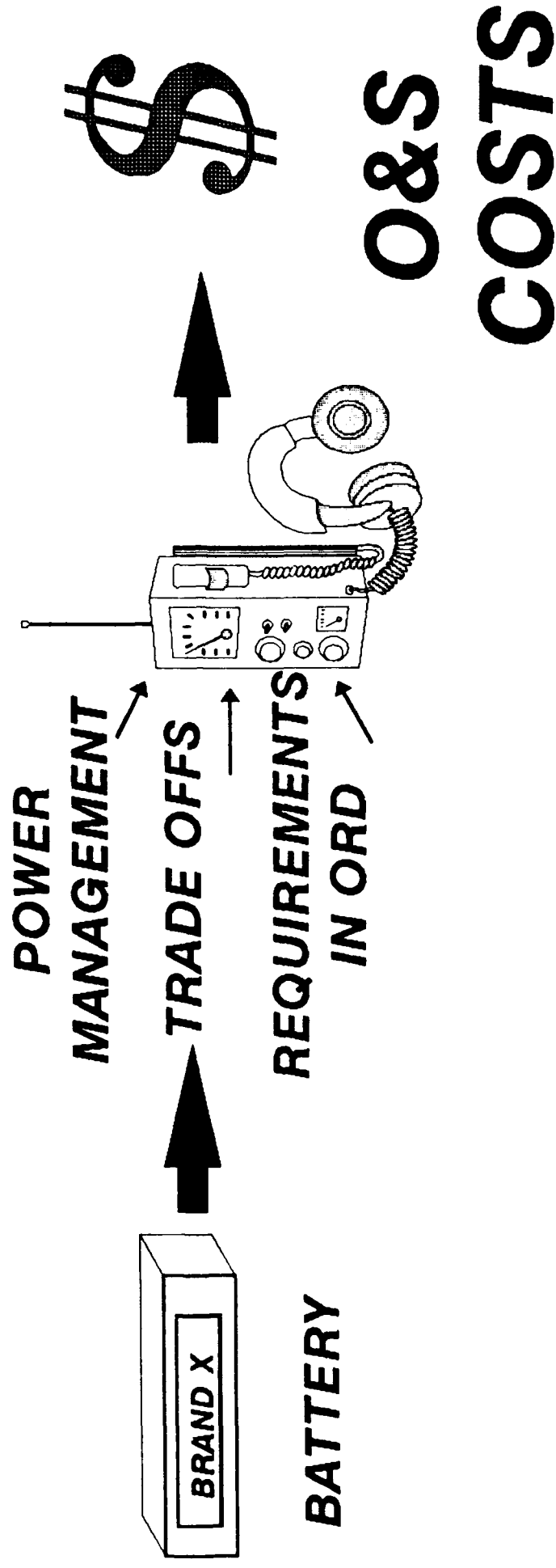


**O&S
COSTS**

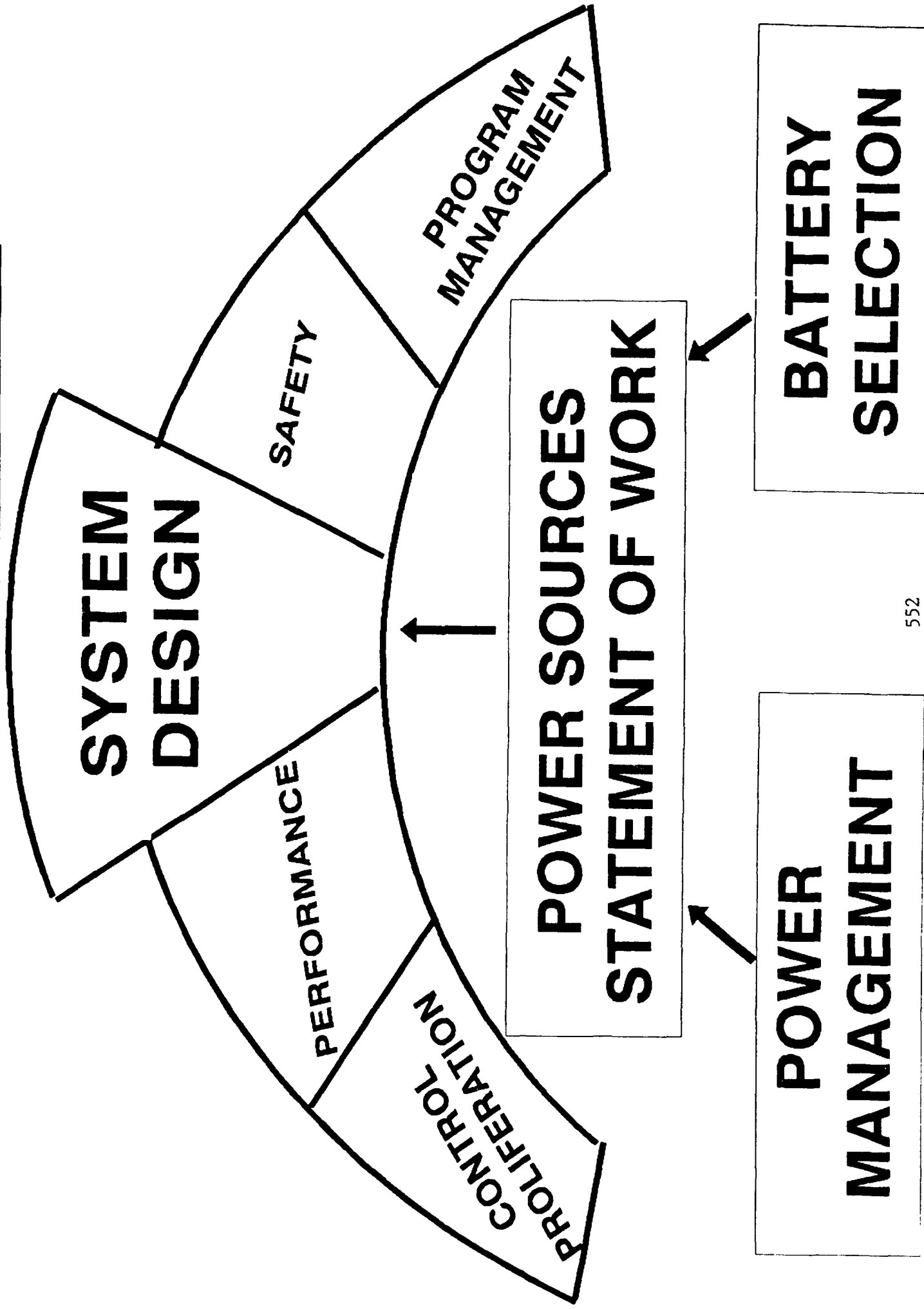


DESIGN SOLUTIONS

SYSTEM DESIGN INFLUENCES



IMPLEMENTING THE SOLUTION

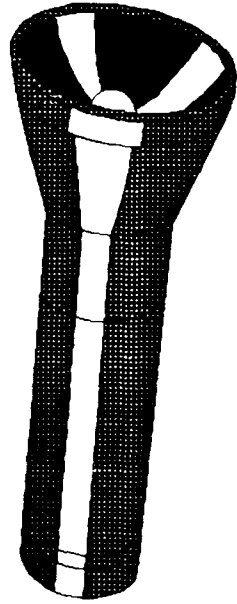


WHAT IS POWER MANAGEMENT?

- ▶ ENERGY EFFICIENT **HARDWARE** DESIGN
- ▶ **SOFTWARE** THAT DETERMINES WHAT **HARDWARE** IS NOT BEING USED AND POWERS IT UP AND DOWN AT THE OPTIMUM MOMENT
- ▶ INCORPORATION OF AN INTERNAL **STATE OF CHARGE** CAPABILITY

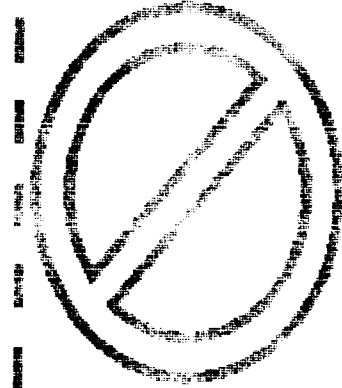
BATTERY SELECTION

**CONSUMER
BATTERIES
(COTS)**



**MILITARY PREFERRED
BATTERY LIST**
(I.E. BA-5590, BA-5588,
BA-5567, BA-5847)

**NO
UNIQUES**



RESULTS OF POWER MANAGEMENT SINGGARS PRODUCT IMPROVEMENT

ANNUAL

BATTERY COSTS:

\$1,237,500

BASED ON USAGE
BY 82ND AIRBORNE

BEFORE

ANNUAL

BATTERY COSTS:

\$891,500

**25% REDUCTION
IN POWER
CONSUMPTION**

AFTER

SAVINGS = \$346,000/YR

SUMMARY

**SYSTEM DESIGN SOLUTIONS HAVE
THE GREATEST IMPACT ON
REDUCING BATTERY O&S COSTS.**

BATTERY
MANAGEMENT OFFICE

RICHARD RIZZO
AMC BATTERY FOCAL POINT

DSN 992-8941

COMM (908) 532-8941

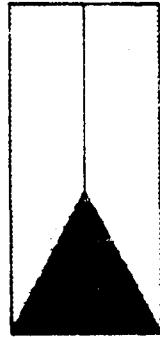
FAX: X23418

E-MAIL:AMSEL-LC-SM-S@MONMOUTH-EMH3. ARMY.MIL

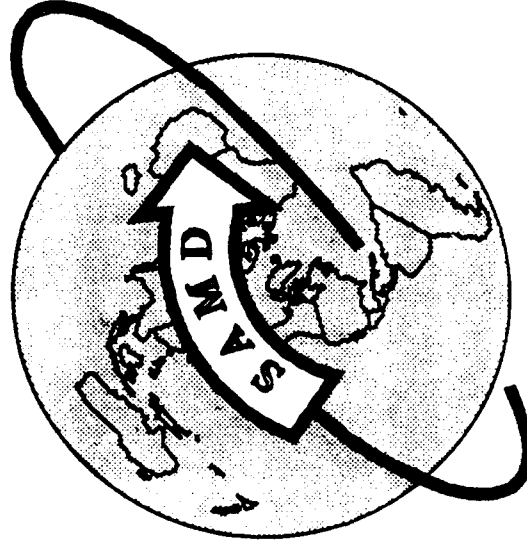
CECOM, SYS MGT DIR
AMSEL-LC-SM-S1

FT. MONMOUTH NJ 07703

NOTES



OPPORTUNITIES IN FOREIGN MILITARY SALES



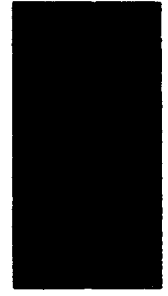
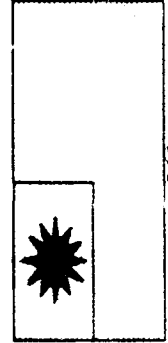
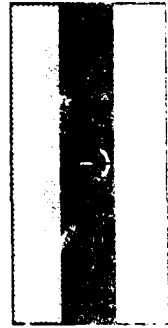
SECURITY ASSISTANCE MANAGEMENT DIRECTORATE

UNCLASSIFIED

Director

Eugene P. Bennett

Fort Monmouth, New Jersey



26 April 94

POINT PAPER

SUBJECT: Opportunities in Foreign Military Sales (FMS)

PURPOSE: To provide representatives from communications and electronics companies with an overview of future sales opportunities in the FMS arena. This presentation will be made at Advanced Planning Briefing for Industry (APBI) to be held 11-12 May 94

FACTS:

- Foreign military customers of the U.S. Government will receive better terms for their purchases if a number of companies are able to submit bids for their requirements.
- The Security Assistance Management Directorate portion of the APBI will give industry notice of known future FMS requirements enabling a broader range of companies to compete for FMS contracts.
- Benefits include better service and cost control for FMS customers

RELEASED BY:
EUGENE P. BENNETT
GM-15
DIRECTOR/ Security Assistance
Management
X22155

Eugene P. Bennett

ACTION OFFICER
FRED OTTEN
GS-12
LOG MGMT SPEC/ Security
Assistance Management
X28662

Fred Otten



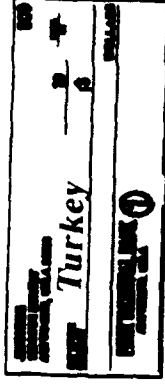
FOREIGN MILITARY SALES BENEFITS



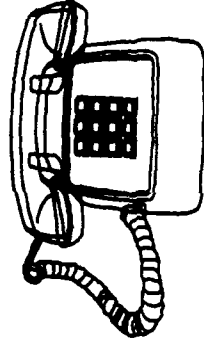
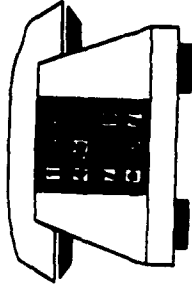
- ▶ INCREASES SALES AND EXPORTS \$
- ▶ HELPS FRIENDLY COUNTRIES BECOME MORE SELF-SUFFICIENT 
- ▶ GIVES THE U.S. INCREASED ACCESS AND INFLUENCE ABROAD 
- ▶ SUSTAINS THE U.S. DEFENSE INDUSTRIAL BASE 

CHANGING TIMES

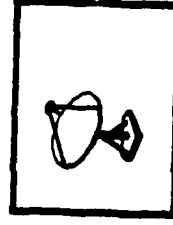
- Foreign Military Financing Policy



- Nonstandard vs Standard Requirements




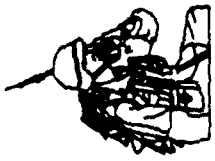
- Marketing



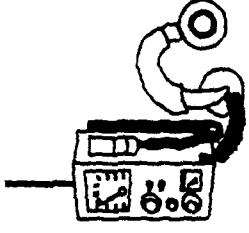
FOREIGN MILITARY FINANCING

- NEW POLICY EFFECTIVE JUL 94
- ELIMINATES USE OF CREDIT DOLLARS FOR DIRECT COMMERCIAL SALES
- IMPACTS ISRAEL, EGYPT, TURKEY, GREECE, PORTUGAL, TUNISIA, MOROCCO AND JORDAN

JOHN DOE 123 MAIN STREET ANYWHERE, USA 00000	000
FOR FMS	19 87
NO TO THE ORDER OF	PROCUREMENT ONLY \$
DOLLARS	
FIRST NATIONAL BANK  ANYWHERE, U.S.A.	



EQUIPMENT SOLD



Lines Managed

FY-90

FY-93

► Standard

554

676

► Nonstandard

293

955

Total:

847

1,631

Contracts Awarded

► Standard

\$38M

\$16M

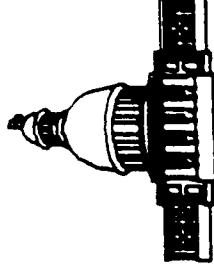
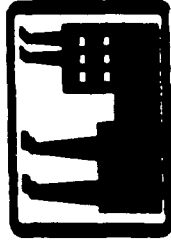
► Nonstandard

\$4M

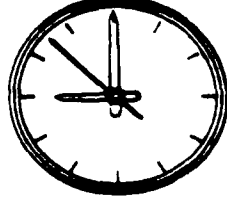
\$151M

MARKETING

- Team Effort - Industry & Government



- Improve the FMS Process
 - Reduce the Turnaround Times



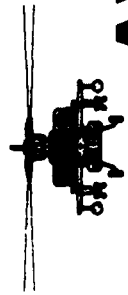
- Streamline Procurement Process
 - Requirements Contract
 - Simplified Nonstandard Acquisition



GUIDELINES FOR SUCCESSFUL DEFENSE INDUSTRY MARKETING EFFORTS

- ***Read DOD booklet, "Comparison of Direct Sales and Foreign Military Sales for Acquisition of Defense Articles & Services**
- ***Review CECOM's Contractor Security Assistance Primer**
- ***Obtain directory listing of SAOs**
- **Contact country representative (Security Assistance Organization [SAO]) to visit the foreign country**
- **Offer total packaged equipment to include initial and follow-on support, i.e., spare parts, associated tool & test equipment, publications, technical support, training and maintenance.**
- **Provide timely/accurate pricing & realistic production/delivery leadtimes.**

***Contact Security Assistance Directorate
ATTN: AMSEL-LC-SA-D-SY
Fort Monmouth, NJ 07703-5002
(908) 532-8649**



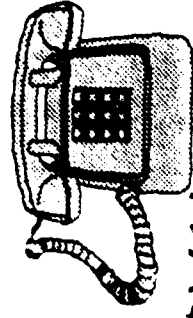
AVIONICS SUPPORT PROGRAM

<u>AIRCRAFT</u>	<u>QTY</u>	<u>\$VAL</u>
AH-64 (APACHE)	20-33	\$23.5M
AH-1S (COBRA)	35	\$14.5M
CH-47D (CHINOOK)	4	\$1.1M
UH-1H (HUEY)	*	\$126K
AN/APR-39A(V)3 + SUPPORT	43	\$2.5M

*MARGINAL SUPPORTABILITY AVIONICS UPGRADE PROGRAM
POC: JOSE GONZALEZ - COMM. (908) 532-8637 (APACHE & COBRA)
POC: VERNELL DANIELS - COMM. (908) 532-8634 (CHINOOK & HUEY)
POC: NANCY CRESSEY - COMM. (908) 532-8626 (AN/APR-39A(V)3)



ELECTRONICS EQUIPMENT



NOMENCLATURE

TYPE NO./QTY

\$VAL

RADIAC SET

AN/VDR-2/ 200

\$200K

RADIAC SET

IM-93A/UD/ 1,426

\$38K

RADIAC DETECTOR
CHARGER

PP-1578/

10

\$2K

TEST SET

AN/PRM-34/ 112

\$153K

REMOTE CONTROL
GROUP

AN/GRA-39/ 112

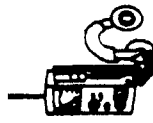
\$153K

SIGNAL GENERATOR

SG-1207/ 57

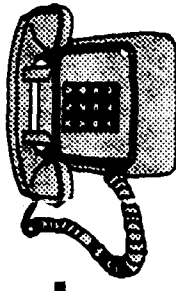
\$2M

POC: MULUGETA ASHEBIR - COMM. (908) 532-8648 (RADIAC SETS & CHARGER)
POC: JANETTE WOODY - COMM (908) 532-8631 (SIGNAL GENERATOR)
POC: WALTER BROWN - COMM. (908) 532-8629 (REMOTE CONTROL GROUP)

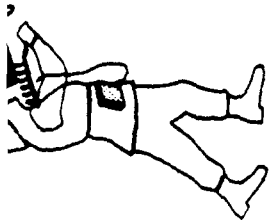


ELECTRONICS EQUIPMENT

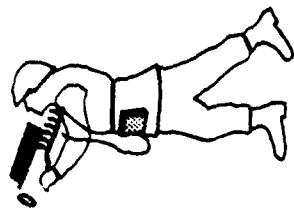
(CONT'D)



<u>NOMENCLATURE</u>	<u>TYPE NO./QTY</u>	<u>\$VAL</u>
TRANSPONDER SET	AN/PPN-19/5	\$ 270K
FM RADIOS	COMMERCIAL/982	\$ 1.4M
BATTERY (LITHIUM)	BA-5567/U/ 30,065	\$ 15K
BATTERY	BA-4386/U/ 26,433	\$ 353K
BATTERY	BA-1568/U/ 3,962	\$ 62K
INTERROGATOR PROGRAMMER	AN/GSX-1A/ 19	\$ 1.4M
POC: DAVE SHUMAN - COMM. (908) 532-5577 (AN/PPN-19)		
POC: LUTRELL MELVIN - COMM. (908) 532-8630 (FM RADIOS)		
POC: LOIS UNIGLICHT - COMM. (908) 532-8645 (BATTERIES)		
POC: PAUL WATSON - COMM. (908) 532-8646 (INTERROGATOR PROGRAMMER)		

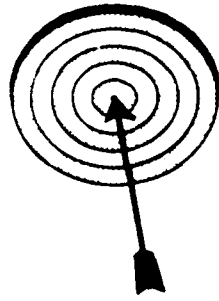


NIGHT VISION EQUIPMENT

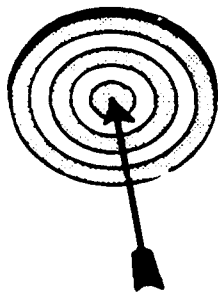


<u>NOMENCLATURE</u>	<u>TYPE NO./QTY</u>	<u>\$VAL</u>
GOGGLES (COMMERCIAL)	AN/PVS-7B/ 220	\$ 1M
NIGHT VISION SIGHT	AN/TVS-5/ 440	\$ 1.1M

POC: DAVID SHUMAN - COMM. (908) 532-5577



PROJECTED AWARD DATES



FY 94

AN/VDR-2

AH-64

AH-1S

CH-47D

PP-1578

AN/PRM-34

AN/GSX-1A

UH-1H

FY 95

AN/PVS-7B

AN/TVS-5

BA-5567

BA-1563

BA-4386

AN/APR 39(V)3

AN/GRA-39

AN/PPN-19

NIGHT

VISION

GOGGLES

(COMMERCIAL)

SG-1207

FM RADIOS

NOTES

**ADDITIONAL
ACQUISITION
INITIATIVES**

SOFTWARE PROTOTYPING

CRAIG CRISS

CHIEF, SOFTWARE PROTOTYPING AND INTEGRATION LAB
SOFTWARE ENGINEERING DIRECTORATE

UNCLASSIFIED

2 February 1994

POINT PAPER

SUBJECT: Software Prototyping and Integration Laboratory

PURPOSE: To provide PEOs with an understanding of how this RDEC SED initiative will help satisfy some of their needs.

FACTS:

- o The CECOM RDEC has initiated the establishment of a Software Prototyping and Integration Laboratory to help accelerate the process of getting new technology/products in the hands of Field Users.
- o The Software Engineering Directorate will manage this laboratory and pursue projects that are conceived to rapidly satisfy the needs of PMS/Users/Battle Labs.
- o The Software Prototyping and Integration Laboratory will emphasize the capture of existing products, common infrastructure, value-added enhancements to form integrated prototypes for user experimentation and evaluation.
- o An Advisory Board will determine project priorities and sequences.
- o While the SED will provide the CORE staff, project staffing will include (as appropriate) representation from other RDEC Directorates, Battle Labs, Field Users, PM Offices and prime contractors.
- o Software Engineering Interns will be coupled to this laboratory to provide a source of valuable talent and develop application-oriented skills prior to permanent assignments throughout the Fort Monmouth community.

BRIEFER: Mr. Craig Criss, GM-14, AMSEL-RD-SE-SY-CC, X26851

RELEASED BY:

JOHN H. SINTIC
GM-15
DIRECTOR, SED
28208

ACTION OFFICER:

CRAIG CRISS
GM-14
CHIEF, CCS BRANCH
26851

SOFTWARE PROTOTYPING

A SOFTWARE SUPPORT ENVIRONMENT STRUCTURED TO QUICKLY
TRANSITION OPERATIONAL CONCEPTS TO FIELDABLE PRODUCTS

SOFTWARE PROTOTYPING

OBJECTIVES

- **DEVELOP "GO TO WAR" PROTOTYPES**
- **INTEGRATE BATTLE LABS AS EXPERIMENTATION AGENT**

SOFTWARE PROTOTYPING

REQUIREMENTS

- **PROTOTYPING TOOLS**
- **COMMERCIAL APPLICATIONS FOR EVALUATION**

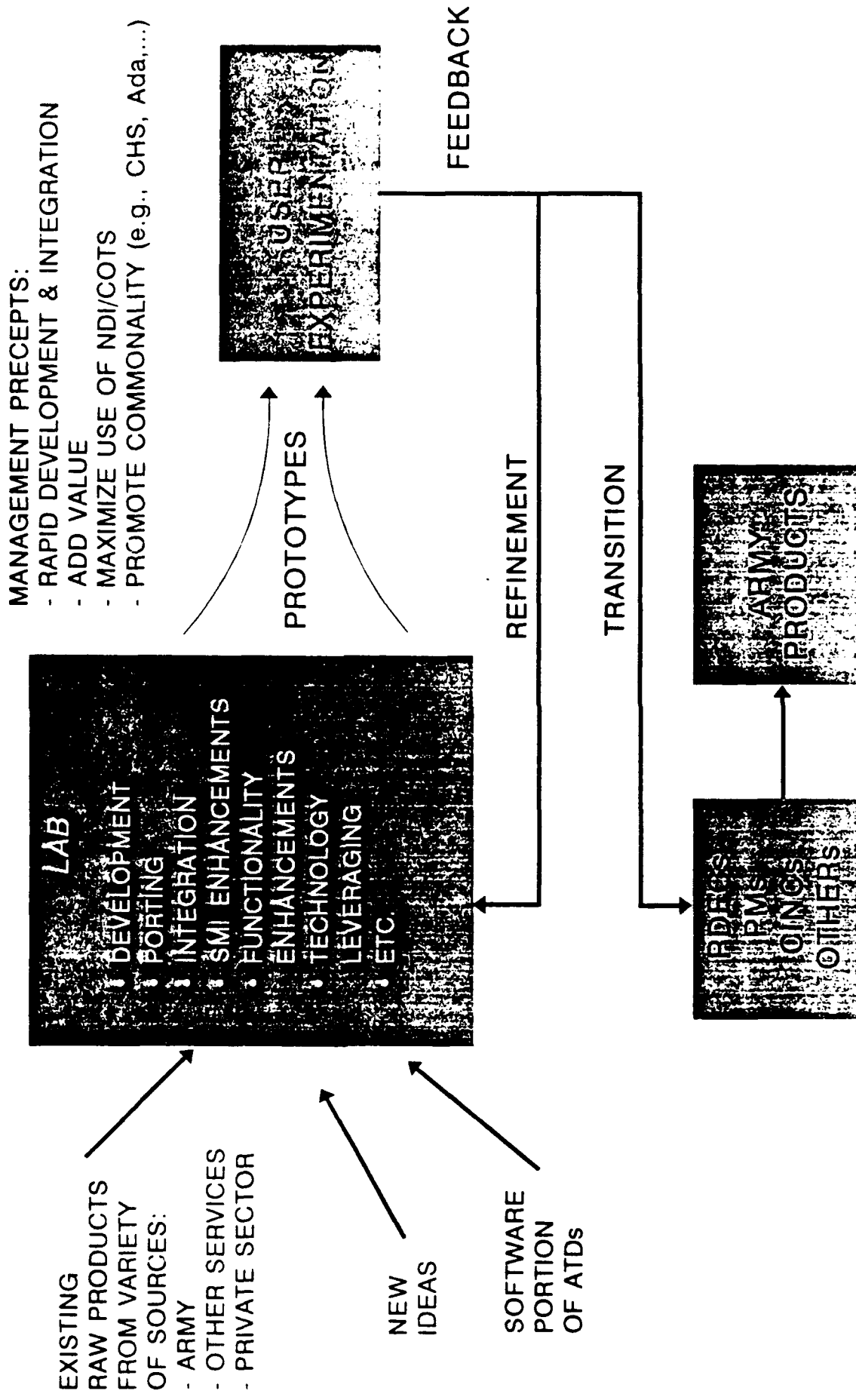
SOFTWARE PROTOTYPING

PAYOFFS

- **REDUCE ACQUISITION RISK**
- **RAPID FIELDING OF PRODUCTS**
- **LEVERAGE COMMERCIAL PRODUCTS**

SOFTWARE PROTOTYPING AND INTEGRATION LAB

PRODUCT "FLOW" CONCEPT



NOTES

BATTLEFIELD DIGITIZATION PROTOCOL SUITE

DR. MYRON HOLINKO
CHIEF, AIN DIVISION
RDEC SOFTWARE ENGINEERING DIRECTORATE

UNCLASSIFIED

DIGITIZING THE BATTLEFIELD

- PROVIDES THE WARFIGHTER AND COMMANDER WITH:
 - A COMMON PICTURE OF THE BATTLEFIELD
 - BATTLEFIELD SYNCHRONIZATION
 - SITUATIONAL AWARENESS
 - COMBAT IDENTIFICATION
 - HORIZONTAL INTEGRATION
- ARMY'S GOAL
 - 1996 DIGITAL BRIGADE
 - 1997 DIGITAL DIVISION
 - 1999 DIGITAL CORPS

THE ARMY'S DECISION - STANDARD PROTOCOL SUITE

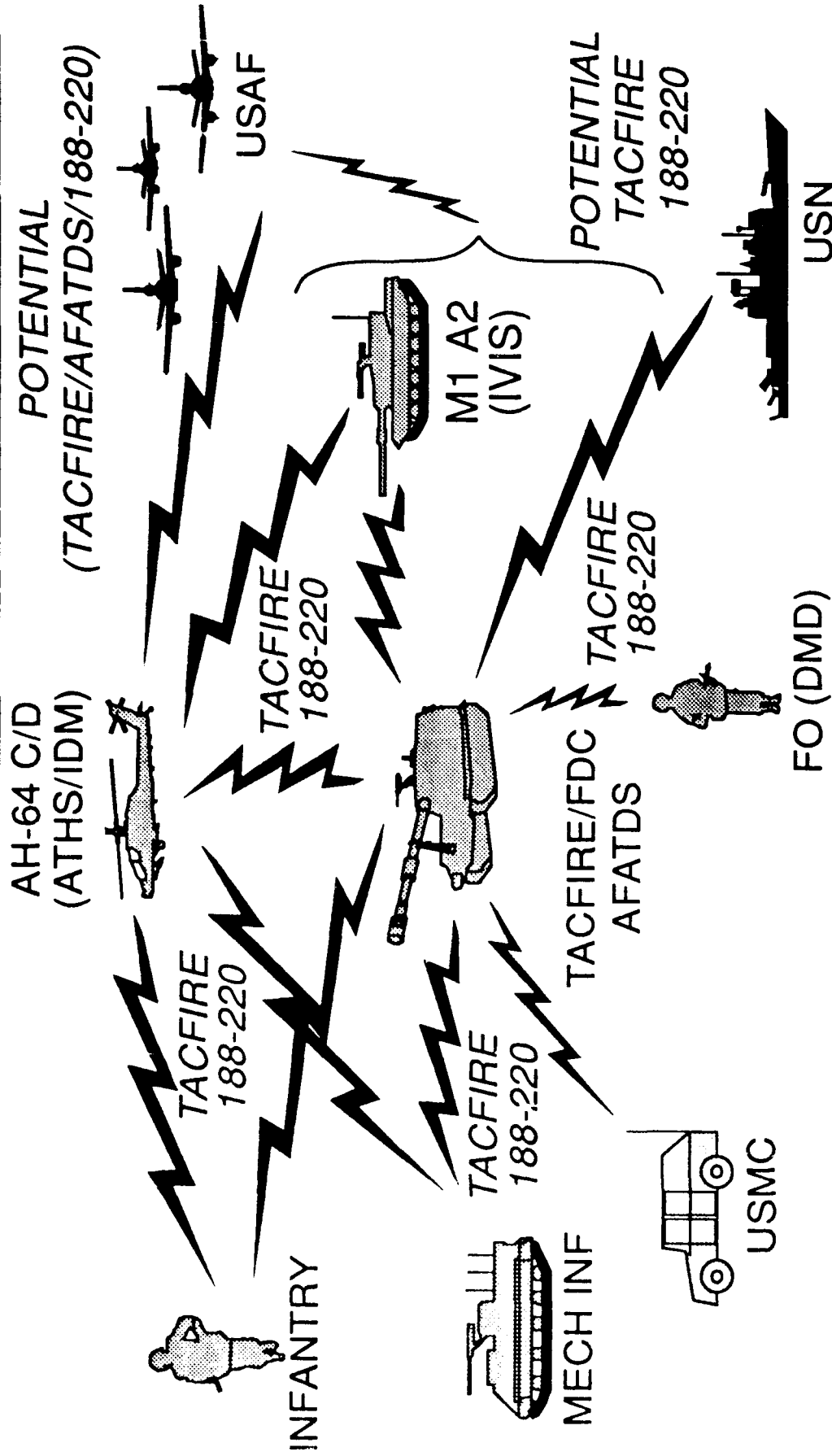
- FOR THE MANEUVER BRIGADE AND BELOW, THE PRIMARY MEANS OF COMMUNICATIONS IS SINGGARS
- IN FEBRUARY 1993, GEN FRANKS TASKED SIGCEN AND CECOM TO STANDARDIZE ON CNR PROTOCOLS AND MESSAGE FORMATS
- IN MAY 1993, SIGCEN AND CECOM RELEASED A JOINT MESSAGE
 - BACKWARD COMPATIBILITY: TACFIRE
 - MID-TERM: MIL-STD-188-220
 - FAR-TERM: "FURTHER IMPROVEMENTS"

WHY "FURTHER IMPROVEMENTS" FOR THE LONG TERM?

- CONCERNS EXPRESSED ABOUT MIL-STD-188-220
 - "NEEDS INTERNETTING/VERTICAL INTEGRATION FEATURES"
 - "NEEDS TO TAKE ADVANTAGE OF THE SIP RADIO"
 - "NEEDS NET MANAGEMENT"
- NEED FOR HIGHER TRANSFER RATES
- NEED FOR IMAGING TRANSFER

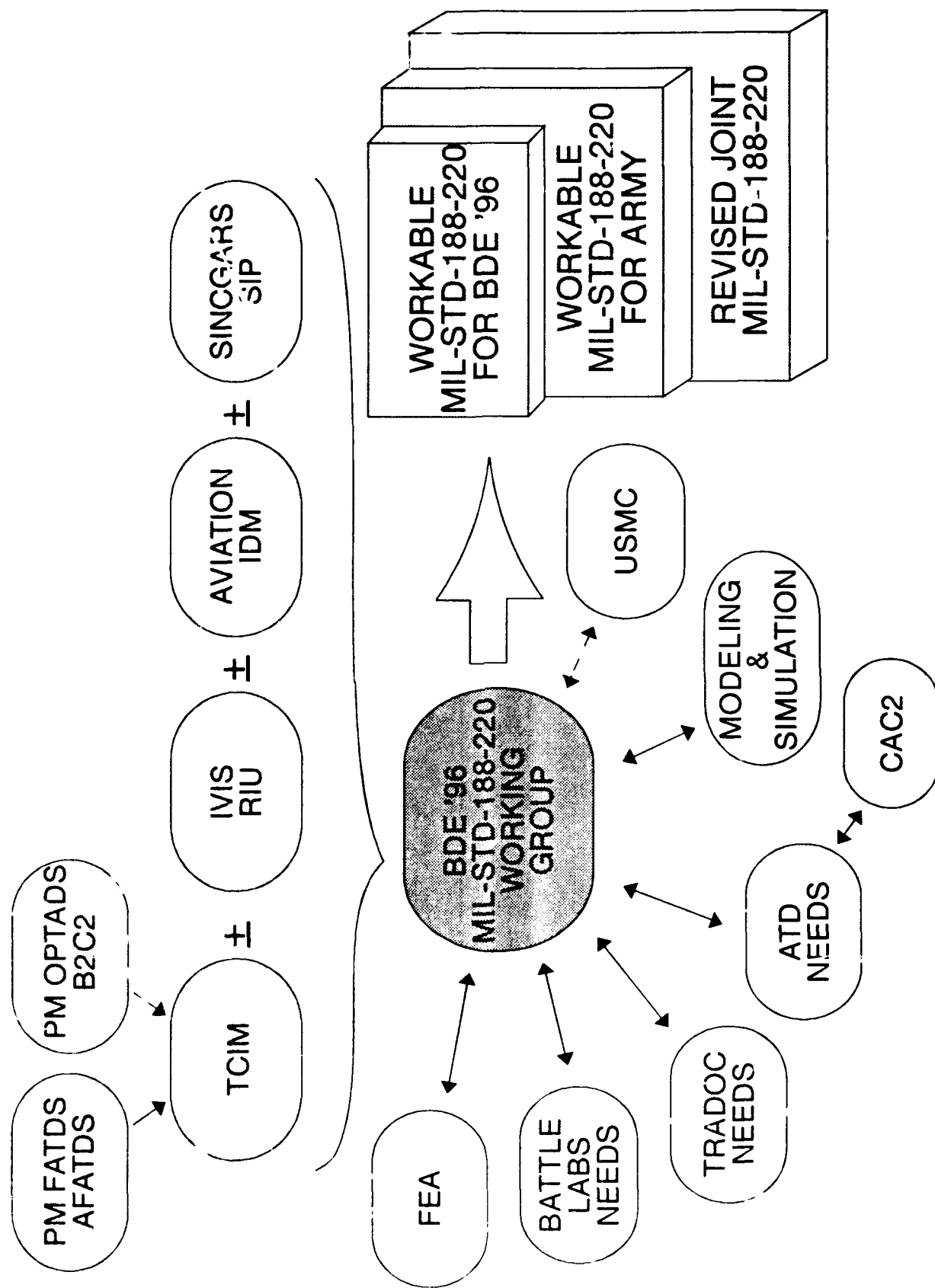
DIGITIZING THE BATTLEFIELD * OBJECTIVE PROTOCOLS

TACFIRE BASELINE THAT EVOLVES TO JOINT STANDARD
(MIL-STD-188-220 WITH VMF MESSAGE SET)



ALL LINKS HAVE 188-220 COMPATIBILITY

UPDATE/REFINEMENT OF MIL-STD-188-220 FOR ARMY USE

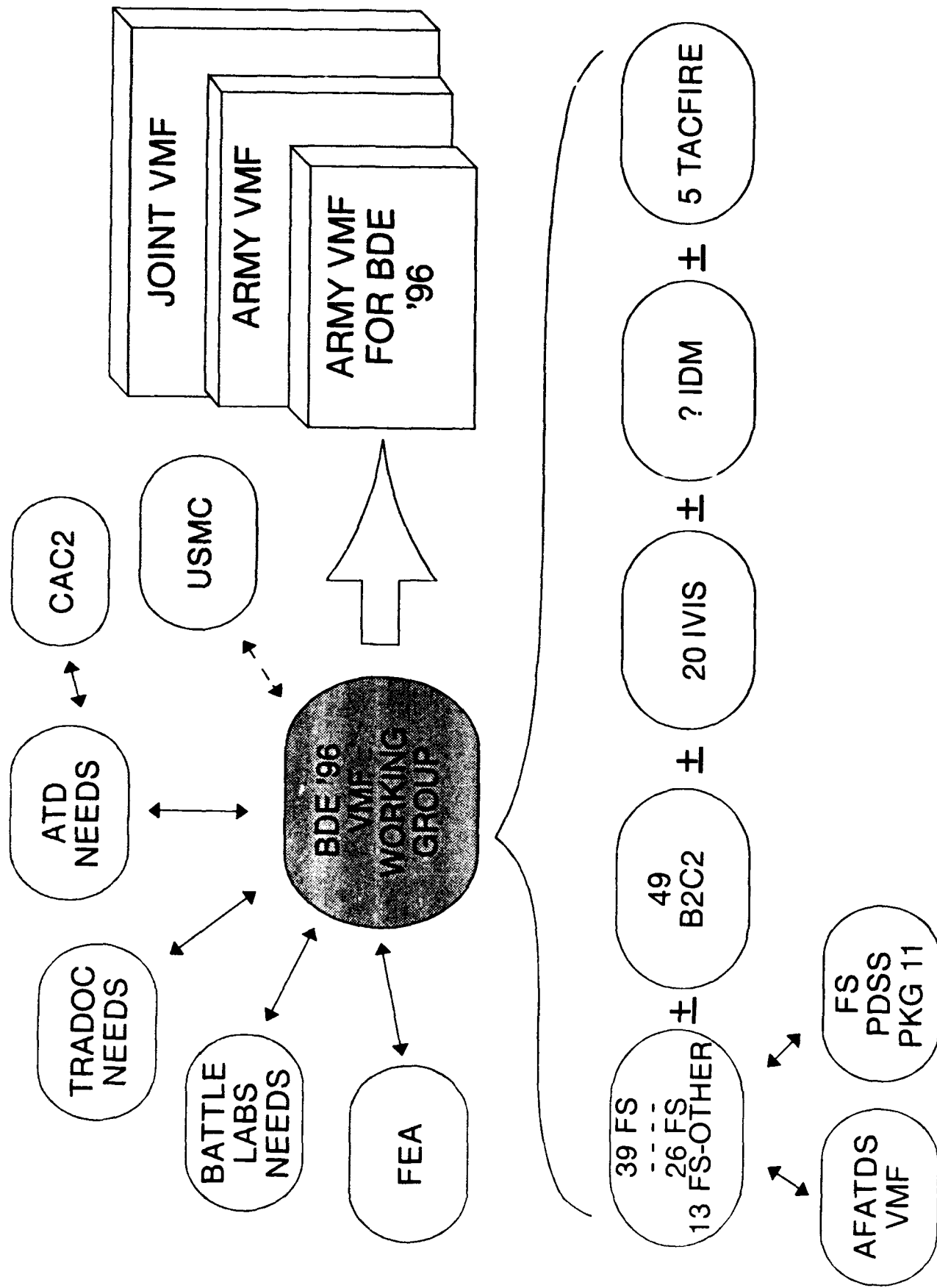


MIL-STD-188-220 IMPLEMENTATION PLAN FOR BRIGADE '96

	FY 94				FY 95				FY 96				FY 97
	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	
1. IDENTIFY SYSTEMS/PLATFORMS	▲												
2. SIP INC REQUIREMENTS		▲											
3. TECHNICAL ARCHITECTURE		▲		▲		▲		▲					▲
4. DEVELOP IOP		▲		▲		▲		▲					
5. DEVELOP PROTOCOL PROFILE		▲											
6. MODEL/SIMULATE (SPM)			▲	▲		▲			▲				
7. PM CHS TCIM DEVELOPMENT			▲	▲	▲								
8. COMMITMENTS (PEO/PMs)			▲										
9. PM's IMPLEMENTATION			▲		▲			▲					
10. C&I TEST SUITE & TESTING		▲		▲		▲			▲				
11. COORDINATE WITH JEO/S/A	▲				▲			▲					▲

FIELDING
▲▲

DEVELOPMENT OF ARMY VMF MESSAGE SET



ARMY INTEROPERABILITY NETWORK (AIN)

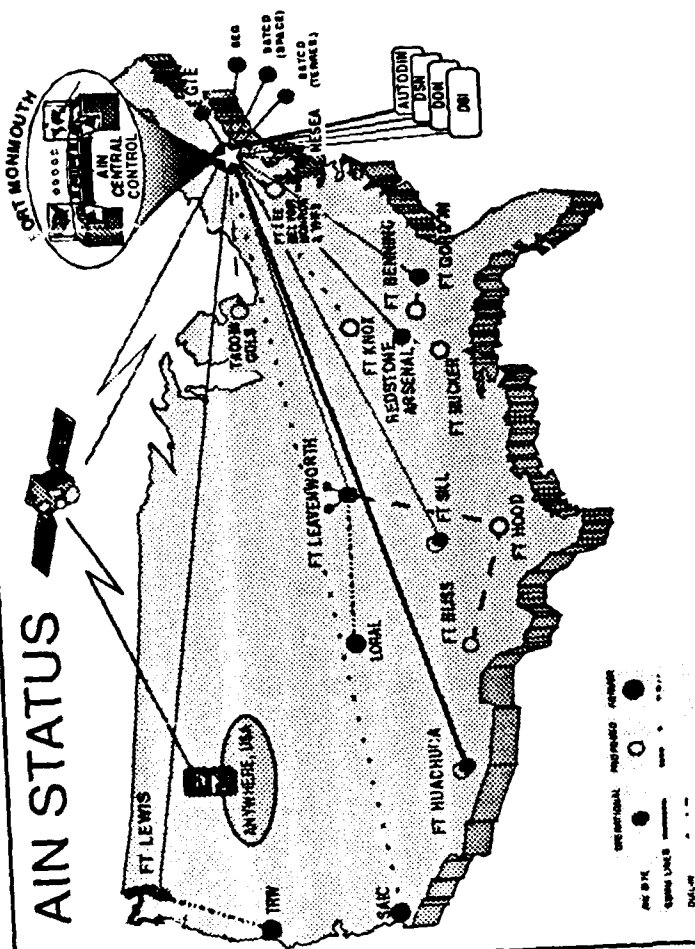
- NATION-WIDE NETWORK OF DISTRIBUTED COMMUNICATIONS, SERVICES, REMOTE FACILITIES, AND TEST CAPABILITIES
- SUPPORTS SOFTWARE AND INTEROPERABILITY RAPID PROTOTYPING, DEVELOPMENT, TESTING, SUSTAINMENT, AND TRAINING
- REPLICATES BATTLEFIELD CONFIGURATIONS BY "VIRTUAL RELOCATION"
- ALLOWS MULTI-PURPOSE USE OF LABORATORIES, TESTBEDS, AND FIELD SITES
- PROVIDES PROVEN, RELIABLE, COST-EFFECTIVE LIFECYCLE CAPABILITY

CENTRAL CONTROL FACILITY



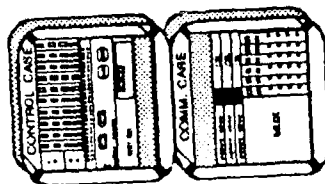
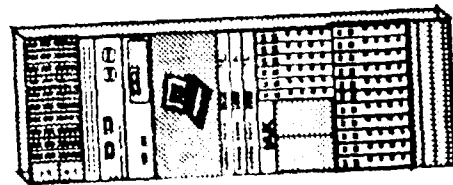
- MANAGEMENT & CONTROL
- CONFIGURATION & STATUS
- COMMUNICATIONS TESTING
- SITE MONITOR & TEST

AIN STATUS



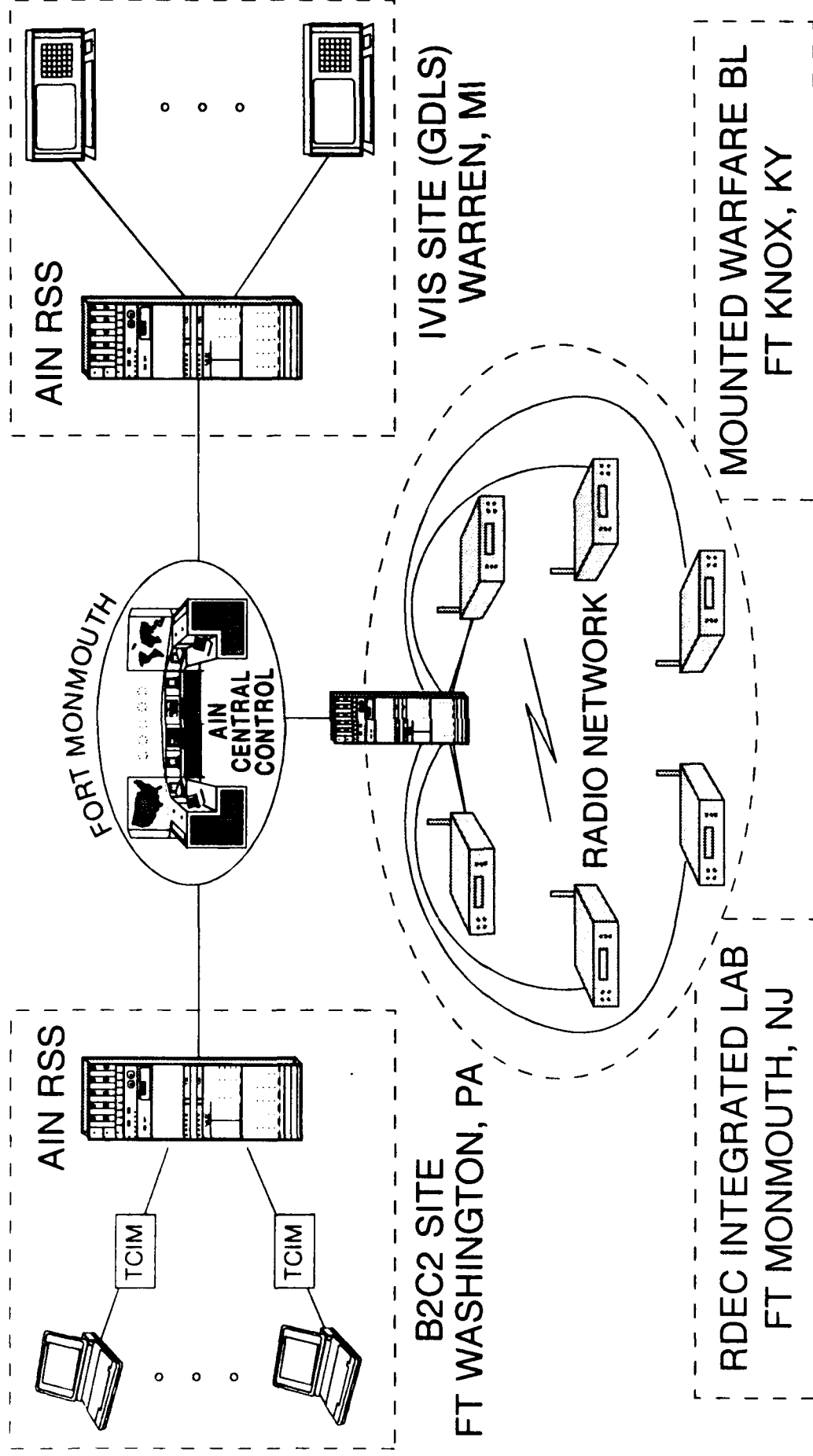
REMOTE SITE SYSTEMS (RSS)

STANDARD TRANSPORTABLE MINI



- TRANSPARENT
- COTS/NDI, TAILORED
- EXPANDABLE & EVOLVABLE
- WIDE ARRAY OF INTERFACES
- NATIVE INTERFACES SUPPORTED
- REMOTELY CONTROLLED

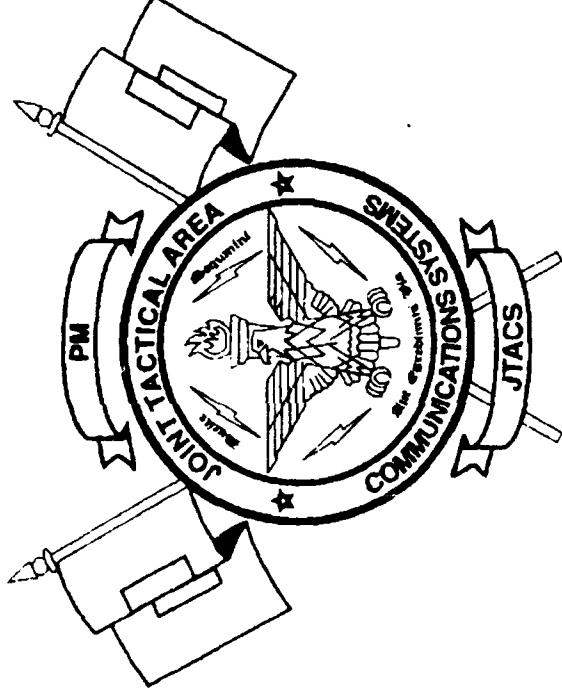
AIN B2C2/IVIS SUPPORT



- ACTUAL SINGGARS NET FOR RF CHARACTERISTICS/IMPACTS
- MULTIPLE TERMINALS POSSIBLE AT ONE OR BOTH SITES
- USER DOES NOT HAVE TO ADAPT INTERFACE TO AIN

NOTES

TACTICAL ASYNCHRONOUS TRANSFER MODE (ATM) SWITCHING



**TOMMY CHENG
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UNCLASSIFIED
603

POINT PAPER

SUBJECT: Asynchronous Transfer Mode Switching

FACTS:

o Asynchronous Transfer Mode (ATM) is an emerging technology for the integrated switching of mixed, digital information streams. The digital information streams may represent different traffic types, such as voice, data, and video. These streams may have different characteristics (constant bit rate, real time and non-real time, high speed and low speed).

o ATM is based on so-called fast packet or cell relay switching. Information streams are segmented into uniform size 53-byte (8-bit octet) cells consisting of a 48-byte information payload and a 5-byte header which contains routing and cell type information. Asynchronous refers to the fact that traffic from different information streams or channels does not have a fixed time slot relationship as it does in conventional time division multiplexers and digital switches.

o ATM is expected to be adopted by commercial communications common carriers and by fixed elements of the defense information system network. ATM is thus expected to be the basis of the network structure required to implement the DOD Global Grid concept. The objective 21st century tactical architecture is envisioned to include ATM or an ATM-like technology for seamless interface. Future warriors are expected to make extensive use of interactive video and multimedia based technologies. Applications include training, conferencing, mission planning and rehearsal, surveillance and targeting.

o There are technical hurdles to be overcome before ATM can be used by tactical forces in a mobile warfighting environment, however. ATM is optimized to take advantage of the high bit rates and low error rates provided by fiber optic cable. Fiber optic cable imposes an unacceptable constraint on the mobility of tactical users. Present tactical transmission systems are inadequate to support ATM switching. High bit rate, low error rate tactical transmission systems are the crucial, missing piece of the ATM puzzle. ATM signaling and routing standards are immature and assume a static network connectivity, where users move, but switches do not. Tactical switch networks must be capable of a fluid topology and dynamic connectivity to support maneuver forces.

BEST AVAILABLE COPY

o ATM is still in a concept exploration, research and development phase. PEO COMM/PM JTACS is monitoring commercial and military ATM activities. Limited contract opportunities exist presently in the RDEC and ATD communities. In the longer term contract opportunities will emerge as technical hurdles are overcome and transition to the next generation of switching networks begins.

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TACTICAL ATM SWITCHING

**ATM OR ATM-LIKE TECHNOLOGY IS
ENVISIONED FOR INTRODUCTION INTO
THE OBJECTIVE TACTICAL
COMMUNICATION ARCHITECTURE OF
THE 21ST CENTURY**

TACTICAL ATM SWITCHING STATUS

- ATM IS STILL IN CONCEPT EXPLORATION AND RESEARCH AND DEVELOPMENT PHASE
- TECHNICAL HURDLES EXIST FOR ATM TRANSMISSION IN A TACTICAL ENVIRONMENT
- PEO COMM / PM JTACS ARE MONITORING COMMERCIAL AND MILITARY ATM ACTIVITIES
 - SECURE SURVIVABLE COMMUNICATION NETWORK (SSCN)
 - DEFENSE INFORMATION SYSTEMS AGENCY (DISA) / JOINT INTEROPERABILITY ENGINEERING ORGANIZATION (JIEO) GOAL ARCHITECTURE
 - AT&T EXPERIMENTAL UNIVERSITY NETWORK (XUNET)

TACTICAL ATM SWITCHING

OBJECTIVES

- VIRTUAL REALITY
 - INTERACTIVE TRAINING
 - MULTICASTING
 - AUDIO CONFERENCING
 - REMOTE VIDEO CONSULTING
 - MULTIMEDIA CONFERENCING
 - MULTIPOINT VIDEO CONFERENCING
 - REAL-TIME VIDEO SURVEILLANCE
 - DATABASE TRANSFERS
 - COLLABORATIVE DESKTOP SHARING
 - DISTRIBUTED SIMULATION EXERCISES

TACTICAL ATM SWITCHING REQUIREMENTS

WHERE CAN INDUSTRY HELP?

- TACTICAL TRANSMISSION SYSTEMS
WITH HIGH BIT RATE AND LOW
ERROR RATE IS THE CRITICAL
MISSING PIECE FOR TACTICAL ATM**

TACTICAL ATM SWITCHING PAYOFFS

**ENHANCED TACTICAL AREA
COMMUNICATIONS SYSTEM TO BETTER
SUPPORT THE INCREASING VOICE /
DATA / IMAGERY REQUIREMENTS ON
THE BATTLEFIELD**

TACTICAL ATM SWITCHING CONTRACT OPPORTUNITIES

TO BE DETERMINED

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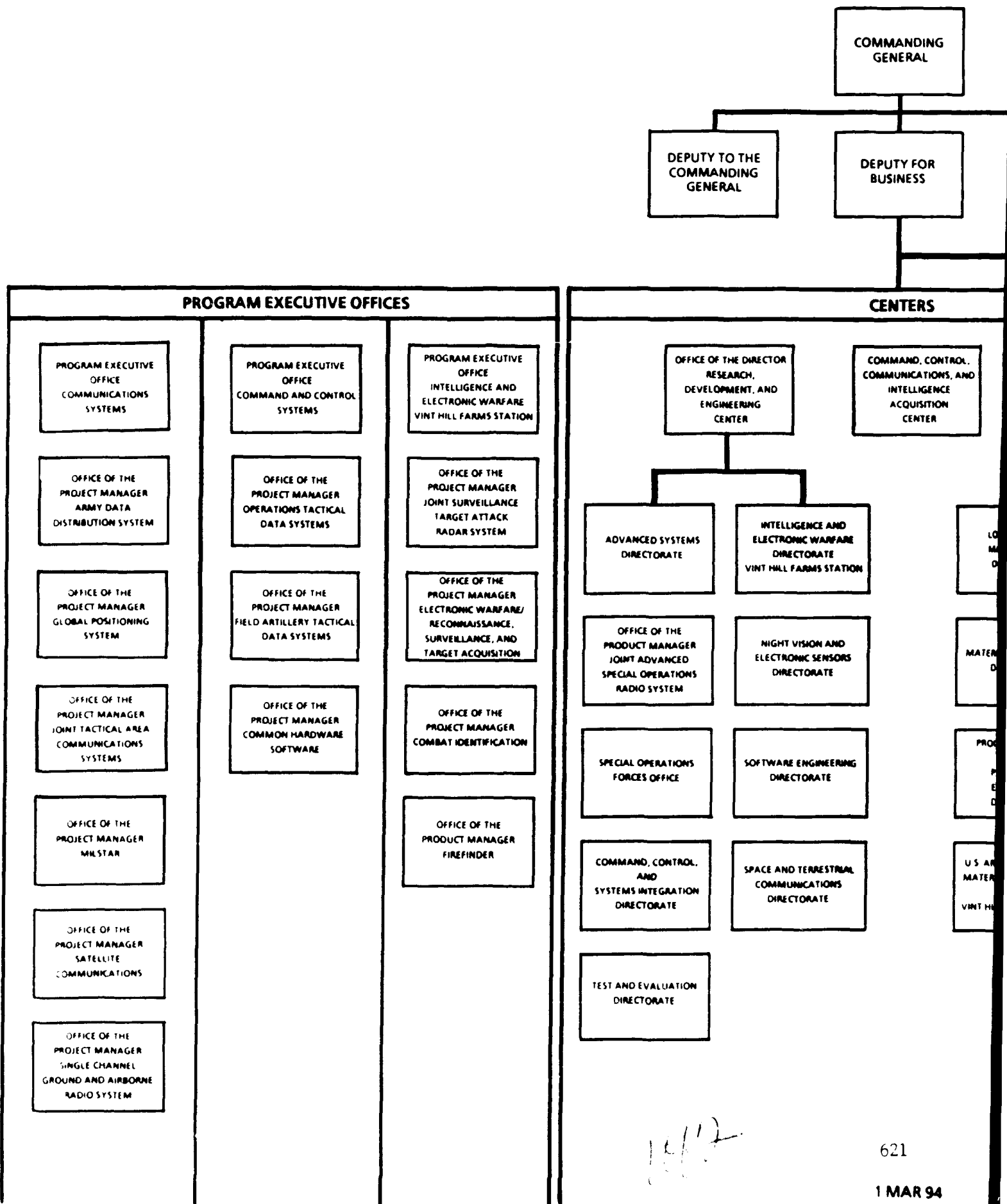
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